ER FEBR 78-014 12 July 78

28 Sept 78

#603

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On file, DOI release instructions apply.

International Energy Biweekly Review

12 July 1978

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INTERNATIONAL ENERGY BIWEEKLY REVIEW

12 July 1978

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INTERNATIONAL ENERGY BIWEEKLY REVIEW

Overview

We estimate that in 1976* energy savings in the Big Seven nations amounted to 4.3 million b/d of oil equivalent.** In consequence, energy consumption was about 6 percent less than what it would have been if it had continued to increase in the same proportion to the level of economic activity as in the period before the 1973/74 oil crisis. Although many factors were involved, price increases appear to have been the most important determinant of successful conservation. In quantity terms, savings have been largest in the United States. In terms of savings as a percentage of total consumption, however, the US record falls short of that of France and Italy but is superior to that of the other major developed countries.

The Overall Record

Big Seven energy consumption in 1976—63 million b/d—was approximately the same as in 1973. Had precrisis trends in both energy use efficiency and economic growth been maintained, the seven countries would have consumed 74 million b/d of oil equivalent in 1976. According to our calculations, one-third of the savings is due to more efficient use of energy and the remaining two-thirds to the slowdown in economic growth.*** (Big Seven GNP in 1976 was only 4.6 percent above 1973; if past trends had continued, it would have been 18 percent higher.)

As expected, oil savings were greater than energy savings as a whole. Oil consumption in the seven countries in 1976 was only 32 million b/d—3 percent below

* The latest year for which data were sufficiently complete for this analysis.

** This essay is based on a series of energy conservation articles, five of which appeared in previous issues of the *International Energy Biweekly Review*: [redacted]

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*** Our estimates of energy conservation are derived by examining energy consumption in each of four economic sectors: transportation, industry, energy production, and other (home, commerce, public services, and agriculture). To determine the amount of savings in each sector, we compared actual energy consumption in 1976 with sectoral estimates of what consumption would have been if the 1968-73 trends in the relationship of energy consumption and the level of economic activity in the sectors had continued to 1976.

[redacted]

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Note: Comments and queries regarding this publication are welcome. They may be directed to [redacted] of the Office of Economic Research, [redacted]

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Major Foreign Countries: Energy Consumption and Savings, by Sector, 1976

Thousand b/d oil equivalent

	Total	Industry	Transportation	Residential Commercial Public Services Agriculture	Energy
West Germany					
1968-73 consumption trend extrapolated	6,335	1,895	805	1,880	1,755 [1]
Growth adjusted consumption	5,575	1,600	740	1,685	1,550 [1]
Actual consumption	5,250	1,475	685	1,540	1,550 [1]
Implied savings	325	125	55	145	0
Savings as a share of growth adjusted consumption	5.8%	7.8%	7.4%	8.6%	0%
Italy					
1968-73 consumption trend extrapolated	3,400	1,100	465	865	970 [1]
Growth adjusted consumption	3,050	1,015	410	780	845 [1]
Actual consumption	2,830	990	365	730	745 [1]
Implied savings	220	25	45	50	100
Savings as a share of growth adjusted consumption	7.2%	2.5%	11.0%	6.4%	11.8%
United Kingdom					
1968-73 consumption trend extrapolated	4,875	1,220	700	1,105	1,850
Growth adjusted consumption	4,400	1,050	660	1,095	1,595
Actual consumption	4,210	1,020	610	1,050	1,530
Implied savings	190	30	50	45	65
Savings as a share of growth adjusted consumption	4.3%	2.9%	7.6%	4.1%	4.1%
France					
1968-73 consumption trend extrapolated	4,325	1,370	810	1,475	670
Growth adjusted consumption	3,855	1,180	720	1,395	560
Actual consumption	3,550	1,160	670	1,190	530
Implied savings	305	20	50	205	30
Savings as a share of growth adjusted consumption	7.9%	1.7%	6.9%	14.7%	5.4%
Western Europe Total					
1968-73 consumption trend extrapolated	18,935	5,585	2,780	5,325	5,245
Growth adjusted consumption	16,880	4,845	2,530	4,955	4,550
Actual consumption	15,840	4,645	2,330	4,510	4,355
Implied savings	1,040	200	200	445	195
Savings as a share of growth adjusted consumption	6.2%	4.1%	7.9%	9.0%	4.3%
Japan					
1968-73 consumption trend extrapolated	9,885	6,080 [2]	1,200	2,130	475 [3]

Major Foreign Countries: Energy Consumption and Savings, by Sector, 1976 (Continued)

Thousand b/d oil equivalent

	Total	Industry	Transportation	Residential Commercial Public Services Agriculture	Energy
Growth adjusted consumption	7,480	4,385	1,035	1,750	310
Actual consumption	7,160	4,215	1,035	1,600	310
Implied savings	320	170	0	150	0
Savings as a share of growth adjusted consumption	4.3%	3.9%	0%	8.6%	0%
Canada					
1968-73 consumption trend extrapolated	4,695	885	825	1,035	1,950
Growth adjusted consumption	4,300	875	810	1,140	1,475
Actual consumption	4,035	820	755	985	1,475
Implied savings	265	55	55	155	0
Savings as a share of growth adjusted consumption	6.2%	6.3%	6.8%	13.6%	0%
Total Big Six					
1968-73 consumption trend extrapolated	33,515	12,550	4,805	8,490	7,670
Growth adjusted consumption	28,660	101,05	4,375	7,845	6,335
Actual consumption	27,035	9,680	4,120	7,095	6,140
Implied savings	1,625	425	255	750	195
Savings as a share of growth adjusted consumption	5.7%	4.2%	5.8%	9.6%	3.1%
United States					
1968-73 consumption trend extrapolated	40,770	12,565	10,500	9,540	8,165
Growth adjusted consumption	38,850	11,700	9,940	10,125	7,085
Actual consumption	36,165	10,710	9,450	9,000	7,005
Implied savings	2,685	990	490	1,125	80
Savings as a share of growth adjusted consumption	6.9%	8.5%	4.9%	11.1%	1.1%
Total Big Seven					
1968-73 consumption trend extrapolated	74,285	25,115	15,305	18,030	15,835
Growth adjusted consumption	67,510	21,805	14,315	17,970	13,420
Actual consumption	63,200	20,390	13,570	16,095	13,145
Implied savings	4,310	1,415	745	1,875	275
Savings as a share of growth adjusted consumption	6.4%	6.5%	5.2%	10.4%	2.0%

[1] Including bunkers and statistical difference.
[2] Including energy transformation sector.
[3] Bunkers, miscellaneous, and errors and omissions.

the 1973 level. Had the 1969-73 GNP growth rate continued and the role of oil in total energy consumption remained unchanged, oil consumption would have reached 40 million b/d in 1976.

With regard to the four main energy-consuming sectors—transportation, industry, energy production, and other (home, commerce, public services, and agriculture)—it is in the "other" sector that the most striking savings were made. Of the 4.3 million b/d of savings attributable to conservation (that is, excluding savings attributable to slower economic growth), savings in the sector amounted to 1.9 million b/d. The industrial sector took second place with 1.4 million b/d of savings, followed by transportation (745,000 b/d) and energy production (275,000 b/d).

The Record by Country

France is the leading energy saver, with 1976 consumption estimated at 8 percent below the precrisis trend. Savings amounted to 305,000 b/d oil equivalent. The impact of higher prices has been reinforced by French government action, including the rationing of heating oil, the granting of financial incentives for increased use of insulation, and the establishment of temperature limits—backed by fines—in homes, offices, and public buildings. Two-thirds of France's savings, however, have been in the residential/commercial sector; the record in industry and transportation has been disappointing.

Italy is in the second place, with consumption 7 percent below the precrisis trend; savings amounted to 220,000 b/d. As in France, government action was largely responsible for the good showing. Rome allowed gasoline prices to rise 170 percent to $2.23 per US gallon,* reduced speed limits, banned private automobiles in some areas, spurred public transportation, and established progressive automobile taxes based on engine size to be paid both at the time of purchase and annually thereafter. Interestingly, automobile registrations continued to increase even though gasoline consumption fell. Savings in the Italian transportation sector were 11 percent, well ahead of all other countries. Italy also made impressive savings in the energy production sector, notably oil refining. These savings occurred despite a sharp drop in capacity utilization as Italian refining for reexport to other West European countries was curtailed in the face of shrinking markets.

The United States is very close behind Italy in energy savings. Indeed, both countries' savings round to 7 percent compared with the precrisis trend. The actual US savings are estimated at 2.7 million b/d of oil equivalent in 1976. Eighty percent of the US conservation took place in the residential/commercial and industrial sectors.

* To fill the tank of an Oldsmobile Cutlass would cost about $40.

The United States (like Canada) uses a greater proportion of its total energy for heating than is the case in most other countries; it thus has greater opportunities to cut back in this area through relatively low-cost measures such as increased insulation and reduced thermostat settings. Notable US achievements in the industrial sector were primarily the result of low-cost investments and better maintenance. The United States may also have benefited from a structural shift in industrial output away from energy-intensive products such as steel.

Canada follows the United States closely, with savings of slightly over 6 percent. The bulk of Canadian savings of 265,000 b/d of oil equivalent were in the residential/commercial sector, where Canada has advantages similar to those of the United States.

West Germany, with savings of 6 percent, or 325,000 b/d, is in fifth place. Nearly 40 percent of German conservation was in the industrial sector, where Bonn's success is second only to that of Japan. The German government has allowed a full pass-through of increased costs but has taken few other steps to spur conservation.

Savings in Japan and the United Kingdom were well below those in the rest of the Big Seven. The percentage rate of implied savings in both countries was only about half the French level. Although the United Kingdom has made some gains in the transportation sector and in electricity-generating efficiency, London has put most of its emphasis on increased energy production rather than conservation. Tokyo, despite its heavy dependence on imported energy, has taken no strong conservation measures, preferring to rely on persuasion, guidelines, and public cooperation.

The Role of Government Policy

Government action with regard to energy prices appears to be the most important factor in successful conservation. With the exception of Canada and the United States, governments have generally allowed the full rise in world energy prices to be passed on to energy users. In some cases, governments have acted to push fuel prices even higher, through taxation.

Since 1973 the weighted average price of energy paid by end users has jumped 70 percent. Price increases range from a low of 40 percent in Canada to a high of 100 percent in Italy. In Canada, as in the United States, the price of domestically produced oil has not been allowed to rise to world levels. Under a 1974 federal-provincial agreement, east coast refineries receive large subsidies that keep them competitive with refineries in western Canada that have access to lower-cost domestic crude oil. Canada has allowed the price of natural gas to rise somewhat faster than the interstate price in the United States. The increase in Italy, on the other hand, has far outstripped

the rise in world energy prices, partly reflecting a 160-percent increase in taxes for transportation fuels.

Aside from pricing policy, government conservation programs have tended to be long on exhortation and short on authority. In France, tough restrictions on energy use in the residential/commercial sector are strictly enforced. Elsewhere, little has been done beyond establishing guidelines, expanding energy instruction, and occasionally legislating speed limits for automobiles or subsidies for insulation.

Unlike many countries that lifted energy-saving measures after oil became more plentiful, France has continued to strengthen its program. Paris recently allocated $200 million for investment incentives and other measures to reduce energy use in the industrial sector, introduced a tax on industrial energy users, and abolished the incentives to consumption offered by electric and gas utilities. The strong French presidential system has enabled Paris to take measures that would be politically impossible in other countries.

Major Foreign Countries: Economic Growth and Energy Consumption

	Average Annual Rate of Growth (Percent)	
	1969-73	1974-76
United Kingdom		
GNP	3.0	0.1
Total energy consumption	2.1	−4.2
Oil consumption	4.7	−6.5
France		
GNP	5.9	2.5
Total energy consumption	6.6	−1.1
Oil consumption	13.1	−2.9
West Germany		
GNP	5.1	1.1
Total energy consumption	5.6	−0.8
Oil consumption	7.7	−2.4
Italy		
GNP	4.4	1.9
Total energy consumption	6.7	0.5
Oil consumption	8.9	−2.0
Canada		
GNP	5.7	3.2
Total energy consumption	6.5	0.7
Oil consumption	5.0	0.1
Japan		
GNP	9.0	3.0
Total energy consumption	11.5	0.7
Oil consumption	14.0	1.1

Despite Japan's poor energy endowment, Tokyo's conservation program relies almost entirely on persuasion, instruction, and guidelines. At a recent Cabinet meeting the Japanese Government approved an energy bill, which is expected to be passed either at this or the next session of the Diet. The bill emphasizes upgrading building insulation and increasing efficiency in fuel and power use through taxation relief and dissemination of pertinent technology and information.

Because of their rich energy endowment, Canada and the United Kingdom have given expansion of energy supplies a higher priority than conservation. Moreover, in Canada federal government efforts to develop a comprehensive conservation program are constrained by a division of authority on energy policy that leaves energy resources largely in the hands of the provinces. Similarly, the delicate political balance in Britain has limited the government's ability to legislate a stiff conservation program. Nevertheless, both countries have taken steps to beef up their conservation efforts. Last year Ottawa allocated $1.4 billion over a 7-year period for the newly created Canadian Home Insulation Program in hopes of saving 140,000 b/d of oil equivalent. The program provides grants of two-thirds the cost of home insulation materials to retrofit existing residential units. Late last year Britain allocated $560 million during 1978-81 to spur conservation in the residential and commercial sector.

Outlook

The outlook for future energy savings is mixed. On the plus side, there is an increasing realization on the part of both governments and their publics that the energy problem is real and must be dealt with sometime. Moreover, the relatively mild programs now in effect in most countries allow plenty of opportunity for further tightening. Not all of the easy gains have been made. Stronger energy conservation programs have either been passed or are under consideration in all of the Big Seven countries.

On the minus side, the current weak oil market and the decline in real oil prices have made rapid movement on the issue seem less urgent, and there is some indication the energy users are losing some of their conservation habits. Even after the hard decisions have been made and programs established, years will be required to make the large savings that are possible. The present stock of buildings, capital equipment, and means of transportation can only be replaced over time. (Confidential Noforn)

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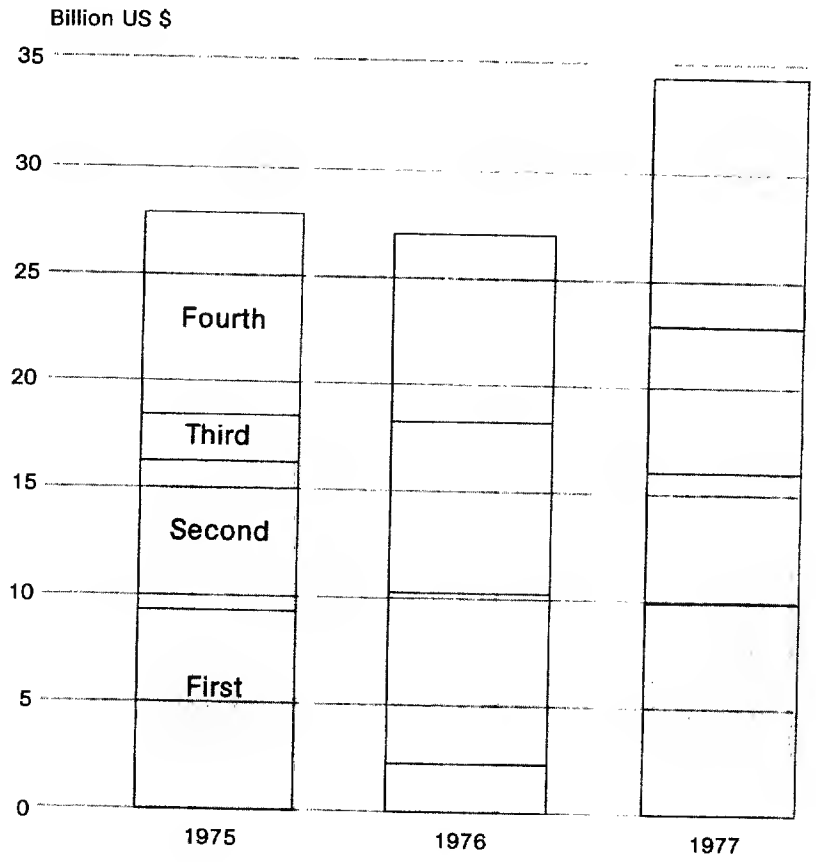
Approved For Release 2002/05/20 : CIA-RDP80T00702A001100010011-6

OPEC COUNTRIES: OFFICIAL FOREIGN INVESTMENT QUICKENS IN 1977 *

OPEC countries increased their official foreign assets by $34.4 billion in 1977, bringing total holdings to $164.7 billion at yearend. Official foreign investment by the 13 member countries was thus $7 billion higher in 1977 than in each of the previous two years. Heavy borrowing (mainly in the Eurocurrency market) and decreased oil company indebtedness boosted the investable surplus of members, permitting rapid accumulation of foreign assets.

OPEC: Quarterly Foreign Official Investment Flows



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Saudi Arabia, Kuwait, Iran, and the United Arab Emirates (UAE) continue to be OPEC's major foreign investors, together accounting for three-fourths of OPEC asset holdings at yearend 1977 and more than 80 percent of the increase during the year. Gabon, Nigeria, and Venezuela, three of the five cartel members running current account deficits in 1977, were net sellers of foreign assets during the year.

OPEC Countries: Foreign Official Assets, Yearend

Million US $

	1974	1975	1976	1977
Total	**75,175**	**103,165**	**130,260**	**164,690**
Algeria	2,490	1,915	2,520	2,620
Ecuador	410	330	560	720
Gabon	0	150	120	20
Indonesia	1,540	630	1,550	2,570
Iran	9,880	12,560	14,410	18,770
Iraq	3,875	3,175	5,130	7,870
Kuwait	9,695	14,790	18,890	25,440
Libya	4,015	2,540	3,990	6,050
Nigeria	5,730	5,880	5,280	4,340
Qatar	1,300	2,155	3,510	3,980
Saudi Arabia	21,705	39,220	50,230	63,580
UAE	5,980	9,340	13,680	18,440
Venezuela	8,555	10,480	10,390	10,290

OPEC Countries: Foreign Official Investment, Yearend 1977

Million US $

	Total	Gold SDRs, and IMF Position [1]	Bank Deposits	Government Securities	Nonreserve Assets
Total	**34,440**	**830**	**13,000**		**20,610**
United States	6,610	270	−520	4,300	2,560
United Kingdom					
US dollars	1,760	0	1,480	0	280
Sterling	−1,600	0	−1,130		−470
Other currencies	110	0	50	0	60
Continental Europe, Japan, and Canada					
US dollars	2,590	0	1,130	120	1,340
Other currencies	4,530	0	1,040	420	3,070
IMF	240	180	0	60	0
World Bank	60	0	0	80	−20
Other	8,220	0	2,350	190	5,680
Unlocated	11,920	380	3,430		8,110

[1] Gold holdings valued at yearend market prices.

Investment in Nonreserve Assets Accelerates

The distribution of OPEC 1977 foreign official investment reflects the increasing financial sophistication of the four major investors. Although reluctant to invest in high-risk or speculative instruments, these Persian Gulf states are investing almost all their surplus funds in long-term assets. Accompanying the move into less liquid assets is a shift into nonreserve assets, such as corporate securities and loans to other governments. In 1977, 60 percent of OPEC placements went into nonreserve assets, compared with 35 percent in 1976.

Currency Diversification Efforts Expanded

A second indication of OPEC's increasing financial sophistication is the currency diversification of OPEC portfolios that occurred in 1977. Efforts by OPEC countries to decrease the concentration of their holdings in US dollar assets were spurred by the dollar's weakness in second half 1977. OPEC members placed 50 percent of their surplus funds in dollar-denominated financial instruments in 1977, compared with 70 percent in 1975 and 80 percent in 1976. Investment in dollar assets was lowest in the third quarter just before the dollar's plunge against most other major currencies. Although dollar asset accumulation slowed noticeably in 1977, only Nigeria, Qatar, and Venezuela actually reduced their dollar holdings during the year.

While dollar-denominated investment slackened, purchases of gold and assets denominated in European currencies and the yen picked up. Among the European currencies, deutsche marks, French francs, Swiss francs, and British pounds were the most attractive outlets for surplus oil earnings. Presumably anticipating further appreciation in the price of gold and further depreciation of the US dollar, Indonesia, Iran, Iraq, and Nigeria purchased gold in 1977. Meanwhile, Kuwait and the UAE—the only OPEC members to have purchased gold in 1975 and 1976—realized a profit by selling some of their gold hoard, after gold prices had jumped nearly $20 an ounce.

Fewer Funds Flow Into US and UK Capital Markets

OPEC placements in US and UK capital markets in 1977 were affected by the dollar's woes. The US share of new OPEC investment fell to 20 percent, compared with 25 percent in 1975 and 30 percent in 1976. Kuwait and Saudi Arabia invested $5.8 billion of the $6.6 billion total OPEC investment in the United States last year; these petrodollars flowed primarily into long-term government and corporate securities.

The UK share of OPEC investment dropped from 15 percent in 1976 to less than 1 percent in 1977. Light OPEC investment in the London Eurodollar market, coupled with a decrease in OPEC sterling deposits, kept OPEC investment in the United Kingdom low. In 1977 new dollar investment in the United Kingdom amounted to $1.8 billion, down from $5.9 billion in 1976.

While OPEC investment in continental European countries and Japan remained at past levels (one-fifth of total placements), cartel members forged ahead with investment in developing nations. One-quarter of the funds placed by OPEC members in 1977 went into LDCs. As in the previous two years, OPEC investment in LDCs primarily took the form of concessionary and nonconcessionary bilateral loans.

OPEC Portfolio Remains Relatively Liquid at Yearend

Despite the shift away from short-term instruments and assets denominated in US dollars that occurred last year, the bulk of OPEC official asset holdings remained in relatively liquid, dollar-denominated assets in industrialized nations at yearend 1977. Holdings of reserve assets—gold, bank deposits, and government securities—accounted for $108.4 billion of the yearend total OPEC portfolio of $164.7 billion. International reserves of the cartel members amounted to only $5 billion less than the combined reserves of the five major non-Communist industrial nations—the United

OPEC Countries: Foreign Official Assets, Yearend 1977

Million US $

	Total	Gold, SDR, and IMF Position [1]	Bank Deposits	Government Securities	Nonreserve Assets
Total	**164,690**	**7,030**	**101,320**		**56,340**
United States	35,070	1,450	5,560	18,110	9,950
United Kingdom					
US dollars	27,320	0	24,080	30	3,210
Sterling	2,390	0	490	1,360	540
Other currencies	1,090	0	1,010	10	70
Continental Europe, Japan, and Canada					
US dollars	15,840	0	9,430	310	6,100
Other currencies	14,170	0	5,050	1,870	7,250
IMF	6,900	1,300	0	5,600	0
World Bank	3,790	0	0	3,580	210
Other	19,970	0	4,780	510	14,680
Unlocated	38,150	4,280	19,540		14,330

[1] Gold holdings valued at yearend market prices.

States, Japan, West Germany, France, and the United Kingdom. The proportion of the OPEC portfolio held in US dollars increased from 60 percent at yearend 1974 to 65 percent at yearend 1977.

Investment Expected To Slow in 1978

Diminished oil revenues and rising import expenditures are expected to retard OPEC official foreign investment in 1978. These two factors probably will slash more than half from the 1977 OPEC current account surplus of $35 billion. Even if borrowing by cartel members continues to grow, the 13 countries almost certainly will not accumulate foreign assets at the previous rate. As in the previous two years, differences in interest and exchange rates among types of financial instruments and countries will determine the disposition of the bulk of OPEC official investment funds in 1978. (Secret Noforn)

* * * * *

USSR: WORLD LEADER IN ENERGY EFFICIENCY OF FREIGHT AND PASSENGER TRANSPORT

This article is the first in a series evaluating the energy efficiency of the Soviet economy by sector.

So far as energy use is concerned, the USSR almost certainly has the most efficient transportation system among major industrial powers. Structurally, the Soviet transport system is markedly different from major Western systems, relying very heavily on railroads and making only limited use of passenger cars and trucks. As a result, energy consumption per freight ton-kilometers and passenger-kilometers is much lower than in Western Europe or the United States. For example, the USSR uses only one-fourth as much energy per passenger-kilometer as the United States and only about two-thirds as much per ton-kilometer of freight. As a result, we see little opportunity for additional energy savings in Soviet transport.

Transportation in the USSR

The high energy efficiency of the Soviet transportation system stems from a structure that reflects geographic, climatic, and economic factors. To span the continent-sized land mass while minimizing investment costs, the USSR developed rail transport to move its enormous freight loads. The severe weather conditions characteristic of the USSR make building and maintaining an extensive road system year-round difficult and costly. Therefore, in 1950-76, while track length declined dramatically in

the West, it increased in the USSR 19 percent—from 116,500 to 138,500 kilometers. Ongoing development of resources in Siberia, far from manufacturing centers in European Russia, points to continuation of this trend. For example, haul lengths of coal shipment—the largest Soviet freight category—rose from 627 to 734 kilometers in 1971-76, as mining shifted from depleted European fields to Siberia.

The stress on expanding the rail system was accompanied by a move from steam to diesel power and electrification that has permitted intensfication of traffic on existing lines. Electrification has permitted higher speeds and a doubling of traffic volume on existing track. As result, Soviet track—only 11 percent of the world total—carries 53 percent of total world rail freight. Electrified mainlines carry nearly 10 times as much freight as the world average—29 percent of world volume on 3 percent of world track. With electrified rail, about 20 percent more efficient than diesel traction in the USSR, concentrations of traffic on electrified lines leads to significant energy savings. Moreover, rail electrification means that about one-third of Soviet transport is powered by coal and hydropower rather than by oil.

Soviet management stresses quick results with minimum investment cost. In transportation, this has meant emphasis on railroads and pipelines, rather than highway construction. Motor vehicles and aircraft are deployed only for special applications. This holds down costs. The overall economy, however, might benefit from more short-haul truck traffic, at some expense to theoretical energy efficiency. The Soviet press frequently airs complaints of rotten fruits and vegetables that have fallen afoul of railroad bottlenecks.

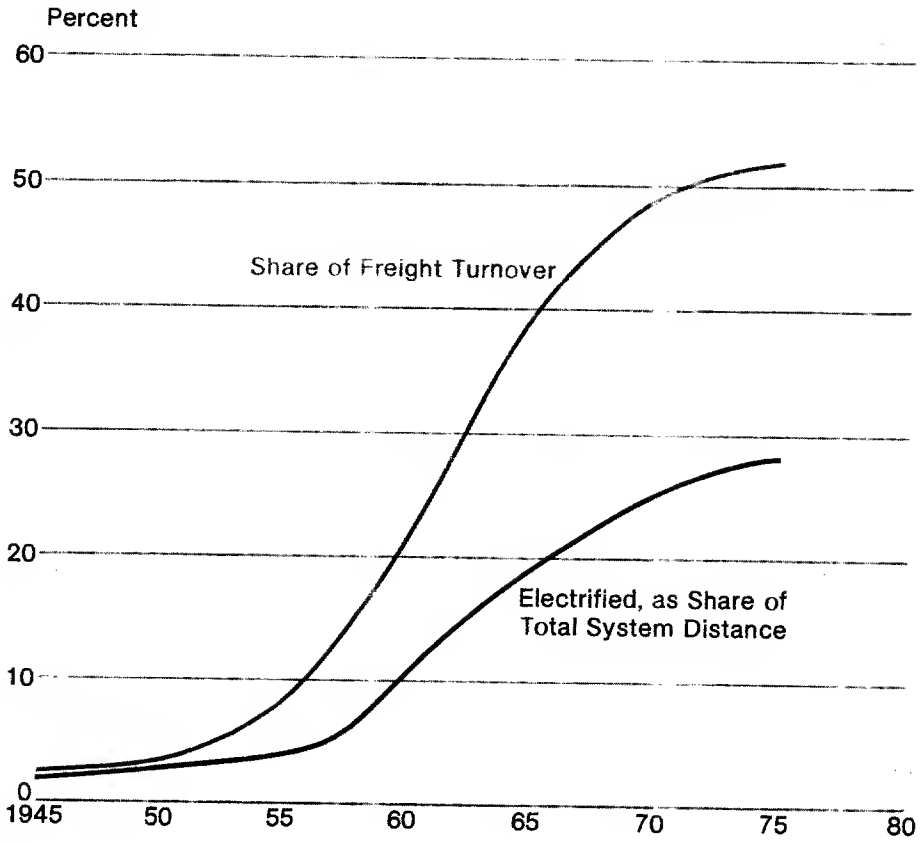
The Soviet leadership clearly recognizes the crucial role of rail in the economy. In June 1976, the Council of Ministers exempted railroads (agriculture was the only other exemption) from a 3-percent nationwide cut in fuel allocations. As a result, rail freight and passenger traffic continued to grow in 1977, while air and river passenger traffic dropped, apparently as a result of fuel shortages.

Comparison with the United States

Transport occupies a much smaller role in the Soviet energy budget than the American. Transportation accounts for about 25 percent of US primary energy use; gasoline for automobiles makes up one-half of the transport total. By contrast, transportation accounted for only about 10 percent to 11 percent of total Soviet energy use in 1975, and this share has been decreasing in recent years.

In terms of transportation requirements, the United States and the USSR have more in common than other industrialized countries. In both, long distances and high volumes characterize transportation movements. In Western Europe and Japan, on the

Electrification of Soviet Rail Lines



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other hand, medium and short hauls are the rule. Economics favor rail freight on long hauls and truck shipment on most hauls less than 200 kilometers. Length of haul, still increasing in the USSR, is closely correlated with the percentage of freight carried by rail, as shown in the following tabulation.

In contrast, US and European transportation systems use a high percentage of trucks, and trucks use two to five times more fuel per ton-kilometers than rail transport. For this reason, energy consumption per ton-kilometer is nearly twice as high in Europe as in the United States and about 50 percent higher in the United States than in the USSR. In addition, the traditional dominance of the automobile in

	Rail Share [1] of Domestic Freight, 1975	Average Length of Rail Freight Haul in Kilometers
	Percent	
United Kingdom	19	121
Italy	20	303
West Germany	30	185
France	33	275
United States	39	863
USSR	76	950

[1] Based on ton-kilometers.

US passenger transport has in the last 20 years been extended to Europe, while the USSR has only recently made automobiles available for nonofficial use.

Because of this different development pattern, the USSR uses only one-fourth as much energy per passenger-kilometer as the United States and about two-thirds as much per ton-kilometer of freight. Most of this difference is explained by the different energy-efficiency rating of the dominant means of transport in each country: rail in the USSR; motor transport in the United States. Consequently, opportunities for further substantial energy savings by the Soviets appear to be quite limited.

Methodology

US and Soviet freight energy efficiencies were compared by taking 1970-72 US operational figures as a base. Differences in efficiency of US and Soviet equipment were allowed:

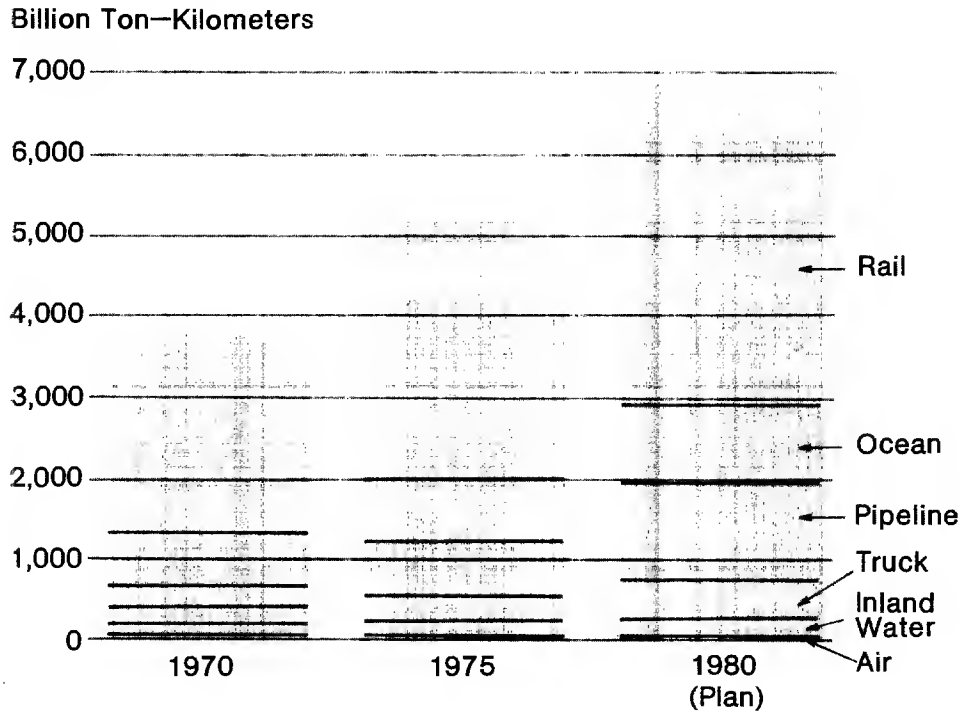
- Soviet rail was given a 10-percent bonus, based on the fact that the 52 percent of the Soviet rail system electrified is 20 percent more energy-efficient than conventional Soviet diesel traction, even allowing for transmission losses.

- Soviet trucks were assessed at 2,450 Btus per ton-kilometer versus 2,140 American, as the United States achieves higher efficiencies through longer average truck hauls.

- Soviet aircraft were penalized 20 percent overall, based on official estimates that their jet engines are 20 percent less efficient than US counterparts.

- Waterway and pipeline energy efficiencies were estimated to be equivalent.

Growth of Soviet Freight



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Mode of Transport	United States Percent	United States BTUs per Ton-Kilometer	United States Weight	USSR Percent	USSR BTUs per Ton-Kilometer	USSR Weight
Rail	39.3	410	161	70.6	370	261
Truck	22.2	2,140	475	7.6	2,450	186
Water	16.0	430	69	4.7	430	20
Pipeline	22.3	260	58	17.0	260	44
Air	0.2	24,460	49	0.06	29,350	18
Weighted average of BTUs per ton-kilometer			812			529

The weighted average of one ton "shipped" one kilometer through both freight systems in accordance with reported 1976 shares indicates that the Soviet freight system uses about 65 percent of the energy used by the US system to ship an equivalent ton-kilometer of freight.

The discrepancy between energy efficiency of passenger moving systems is even more dramatic, chiefly because one-half the US transportation energy budget is expended by cars, which have a low occupancy of 1.3 people per vehicle:

- We estimated 3,060 Btus per kilometer for US cars versus 1,830 Btus for smaller-engined Soviet vehicles.

- US busses, which achieved 760 Btus per passenger-kilometer in 1972 operation, were adjusted to 730 Btu per passenger-kilometer for improved performance. Soviet busses were estimated to consume 370 Btus, because they are operated at close to full occupancy.

- Soviet rail was given a 10-percent bonus because of the superior efficiency of the electrified portion of Soviet rail.

- Starting with a base of 5,690 Btus per passenger-kilometer for US airlines in 1970, we assumed 5,200 under current conditions, allowing for more efficient equipment and higher load factors. Soviet air was penalized 20 percent for less efficient engines, but assigned an overall 90-percent load factor versus 55 percent for the United States.

For a given volume of passenger traffic, the USSR uses about one-fourth of the energy used by the United States.

Energy Requirements To Transport One Person One Kilometer

Mode of Transport	United States			USSR		
	Percent	BTUs per Passenger Kilometer	Weight	Percent	BTUs per Passenger Kilometer	Weight
Car	85.6	3,060	2,619	9.3	1,830	170
Bus	1.8	730	13	40.8	370	151
Rail	0.8	370	3	31.5	330	104
Air	11.8	5,200	614	13.1	3,120	409
Weighted average of BTUs per passenger-kilometer			3,249			880 [1]

[1] Adjusted to reflect incomplete Soviet data.

In the American case, all transportation movements are powered by petroleum. In the USSR, 37 percent of freight and an estimated 26 percent of passenger movement is powered by electricity generated from nonpetroleum sources. (Secret Noforn)

* * * * *

CHINA: OIL INDUSTRY NEEDS FOREIGN HELP

For the first time in Communist China's history, there is now a realistic chance Peking may seek direct foreign participation in the development of its oil industry. Some conversations have already occurred with foreign oilmen that appear to have been tests of their reactions.

Policy Considerations

Numerous ranking members of the post-Mao Chinese leadership apparently believe that without increased foreign help their oil industry will be hard pressed to meet foreign commitments and domestic demand over the medium term. They are leaning toward enlisting foreign investment, technology, and personnel to accelerate growth of production, especially offshore. Peking may, therefore, finally soften its policy of self-reliance enough to experiment with a few projects beyond the heretofore permissible limits for foreign help—equipment imports and ad hoc recruiting of lecturers and troubleshooters. However, any contractual arrangement with a foreign firm probably would be preceded by negotiations that are usually long, even for China, because it would be a precedent-breaking move.

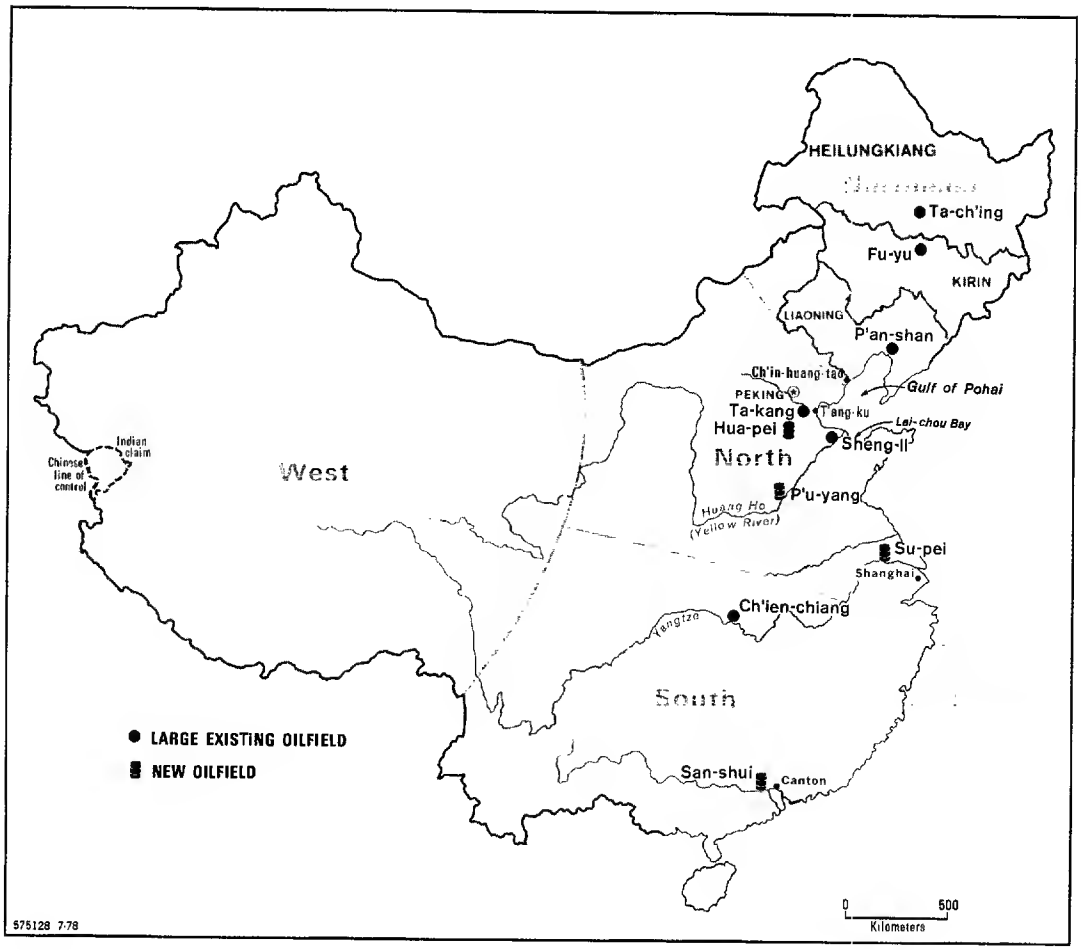
Oil Industry Developments

Anxiety over oil supplies arises from the disappointing performance of the major oilfields since 1975 and the growing Chinese appreciation of how slowly offshore exploration will progress if China rigidly clings to its traditional policy of self-reliance. Annual increases in oil output, which typically exceeded 20 percent before 1975, declined to 13 percent in 1975 and 1976 and to only 8 percent last year. Although a Chinese version of a recession has restrained growth of oil consumption during the past two years, supplies have tightened so much that new regulations are going into effect to ration oil and to compel switchovers to coal wherever possible.

T'a-ch'ing oilfield, which accounts for about 55 percent of all China's oil output, is producing at depths of 3,000 meters or less. Experiments with stimulating output by using underground combustion and steam injection have not reversed this trend.

Ordinary water injection, in use since production from the field started in 1959-60, has now raised the oil/water cut to unacceptable levels. As of April 1978, foreign visitors to Ta-ch'ing were told that attempts to prepare deeper strata for production had not yet succeeded.

China: Selected Oilfields



The development of Ta-kang, China's third largest field with a 1977 output of 100,000 b/d, has been declared a failure by a high-ranking Chinese oil official who toured the United States last year. He also downplayed prospects for the Gulf of Pohai, where China has made its maiden efforts at offshore exploitation, saying China could

not produce enough oil from the Gulf to pay for offshore platforms because reserves there are not large enough. Moreover, a Chinese inquiry [redacted] about technology for injecting reservoirs with seawater indicates that natural reservoir pressures in the Gulf oil deposits are not self-sustaining. 25X1C

In the ocean proper, as opposed to the shallow Pohai Gulf, China has drilled a small number of test wells along the southern coast and in the Yellow Sea. The Chinese have had the better part of a year to operate without help the four imported offshore platforms delivered to them during 1977. Their experience seems to have induced pessimism about the rate of progress in the continued absence of foreign help. [redacted] 25X1X

25X1X [redacted]

The investment expense of offshore work also worries Peking. [redacted] 25X1X

25X1X [redacted]
25X1X [redacted] requests for imported industrial plants submitted by the various industries and ministries total more than 10 times what China will be able to afford during the next five years. Thus the oil industry can no longer be given the priority in investment funds that made possible its rapid growth during the 1950s and 1960s. The arguments for letting foreign oil firms bear the enormous costs of offshore exploration must be becoming increasingly persuasive.

Foreign Participation

For many years, foreign oil firms have been proposing participation schemes to Peking. Chinese officials listened politely, but whatever the inclinations of the more pragmatic officials, the Chinese political atmosphere made acceptance of foreign participation in the oil industry impossible.

The present leadership, although noted for its relatively nonideological approach to economic planning, obviously feels that even imports of foreign technology, let alone active foreign participation in a strategic resource industry such as oil, demand explanation. In its official pronouncements, it has provided broad justification for any help it may choose to seek from abroad. It has now officially declared that science and technology do not have class natures and that importing advanced technology is "normal." [redacted] 25X1C

25X1C [redacted]

25X1C

If barriers against foreign participation in the oil industry are lowered, however slightly or hesitatingly, it will probably first occur in offshore work. The investment outlays and technological problems for the Chinese are greatest there, and a foreign presence would be easiest to hide from the populace. Peking also needs help in onshore exploration and drilling; it will be a long time, however, before Peking acquiesces to large numbers of foreigners working in its industry. The leadership may adopt a more liberal attitude about temporarily admitting foreign technicians to install and break in new imported equipment, but that would probably be the limit of Peking's tolerance for some time. (Secret Noforn-Nocontract)

* * * * *

ABU DHABI: DEVELOPMENT PLANS FOR THE UPPER ZAKUM

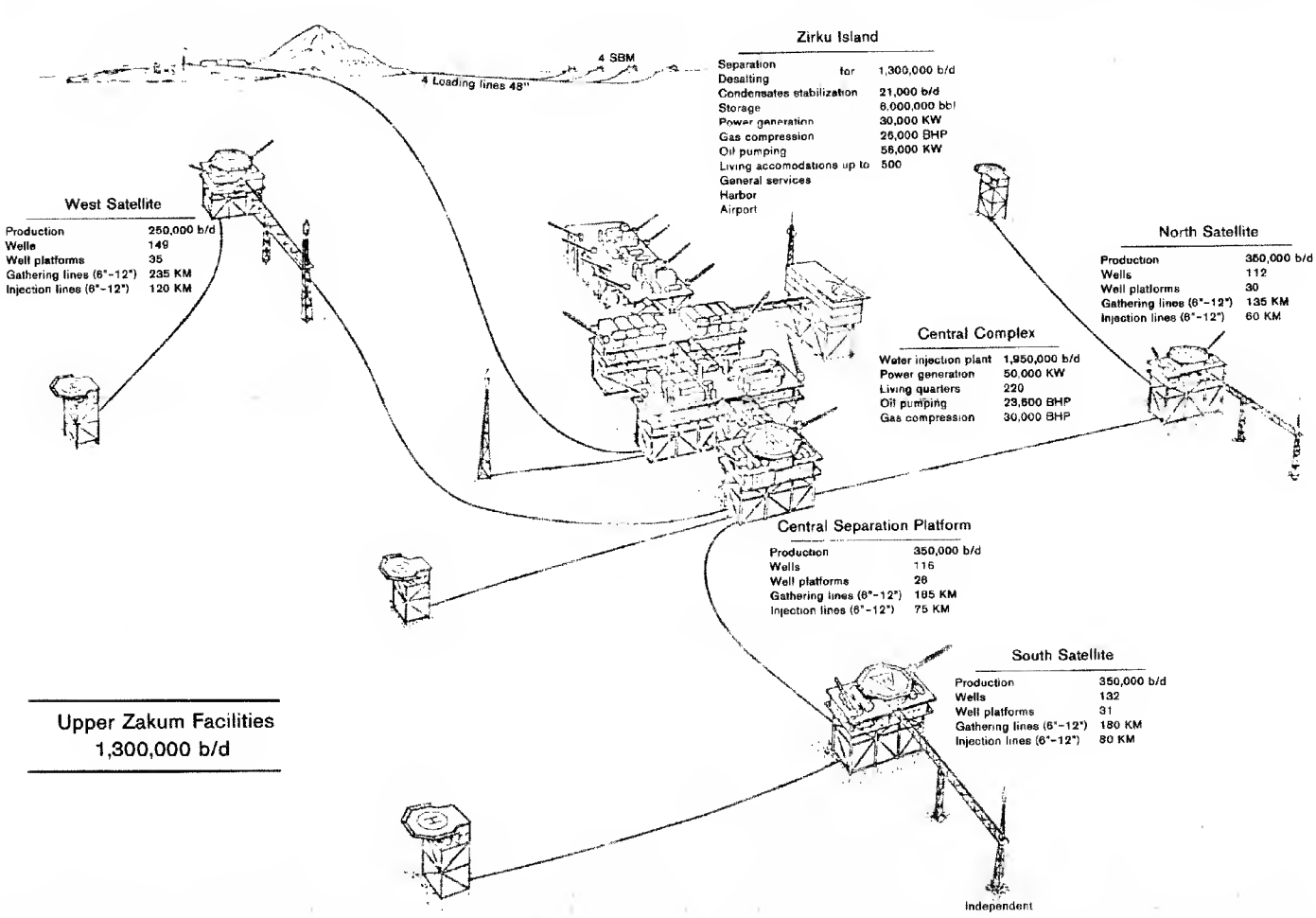
This article examines the multibillion-dollar development program at one major offshore oilfield in order to familiarize readers with the scale of operations involved in bringing large additions to productive capacity onstream. This modern computerized production facility aims at an ultimate capacity of 1.3 million b/d. Completion of the first stage, bringing capacity up to 500,000 b/d, is expected to take almost a decade.

The development program discussed in this article should not be regarded as inflexible. While planning is in an advanced stage, the reservoir engineering has not been completed and many details remain to be worked out. Tenders now being issued based on the current project design enable the developer to queue up on equipment supply production lines for items required months or years from now. The developer then has the option to modify specifications any time until these items are manufactured.

Management

The Upper Zakum is being developed by three of the four participants in Abu Dhabi Marine Areas, LTD. (ADMA)—the consortium operating the offshore concessions that now account for more than 50 percent of oil production in Abu Dhabi. Equity in the consortium is divided among:

- The Abu Dhabi National Oil Company (ADNOC), which holds 60 percent.
- British Petroleum (BP), with a 14.7-percent share.



Upper Zakum Facilities
1,300,000 b/d

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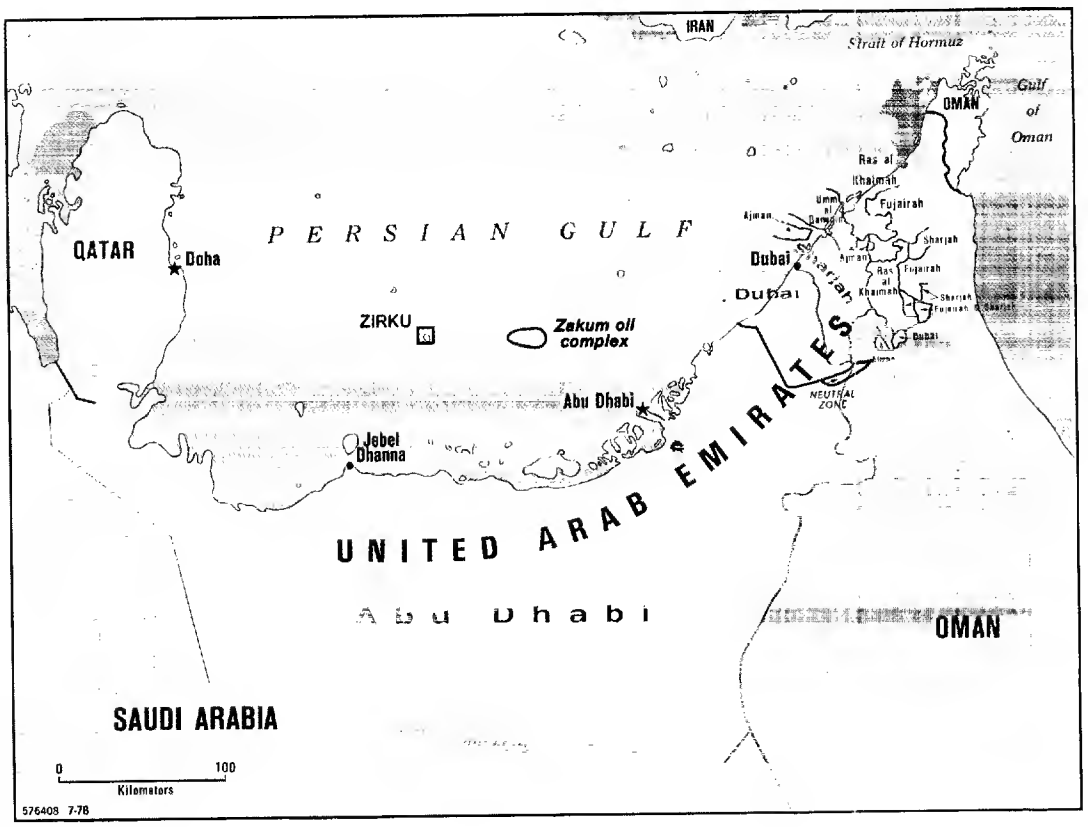
Abu Dhabi: Upper Zakum Complex



- Compagnie Francaise des Petroles (CFP), with 13.3 percent.

- The Japanese Overseas Development Company (JODCO), with 12 percent.

Although the Upper Zakum was originally part of the ADMA concession, the members of the consortium could not agree on terms set by Abu Dhabi for the large investment requirements. In early March 1978, after more than a year of negotiations, ADNOC signed a separate joint venture agreement with JODCO. A joint management committee of the owners will oversee the development work. JODCO will have a 12-percent equity interest in the project. The remaining 88 percent is currently being retained by ADNOC, although BP and CFP have until the end of 1978 to exercise an option to take equity shares.

CFP already has a nonequity interest in Upper Zakum as a service contractor. CFP and ADNOC formed a joint venture—the Zakum Development Company (ZADCO)—to operate the project as of 1 June 1978. CFP will be reimbursed for the costs of its services and will receive a management/operating fee once production begins. Perhaps more important, CFP will have the right to buy up to 20 percent of production at official prices.

General Field Characteristics

ADMA discovered the Zakum oilfield in 1963. The field—the largest in the United Arab Emirates—lies entirely within Lower Cretaceous Thamama limestones. Zakum is divided into six major zones. The top three zones as a group are referred to as Upper Zakum. The remaining three zones are designated Lower Zakum.

Upper Zakum has a maximum length of approximately 50 kilometers and a maximum width of about 30 kilometers. United Arab Emirates Oil Minister Utayba has estimated that oil in place may be between 40 billion and 60 billion barrels; however, the recovery factor is likely to be low. Upper Zakum will require gas injection to facilitate production and water injection to maintain reservoir pressures. Only 10 billion barrels of oil may be recoverable with current techniques, even with the massive pressure maintenance program included in the development plan.

ADMA is currently producing a small volume of crude from Upper Zakum from the two lowest of the three zones that comprise the reservoir. The allowable production level set by the petroleum ministry is 50,000 b/d, compared with 200,000 b/d from Lower Zakum. Typical of most reservoirs in Abu Dhabi, Zakum contains light crude. Crude produced from the Upper Zakum has an average API gravity of 36 degrees, while crude from the Lower Zakum averages 40 degrees. Each has sulfur content of about 1.2 percent by weight.

Design requirements for the Zakum field will take account of typical climatic conditions. During the cool "winter" season (December-March), offshore Abu Dhabi is subjected to ***shamals***—strong northwesterly winds with speeds frequently more than 50 knots, gusting at times to 93 knots. These gale-force winds are often preceded by thunderstorms and accompanied by rough seas and widespread dust storms that reduce visability to about a kilometer. During the season, ***shamals*** occur on the average up to three times a month and usually last three to five days.

Development Schedule

The development program for Upper Zakum is in two broad stages. In the first stage, productive capacity will be expanded to 150,000 b/d in 1980, 350,000 b/d in

1982, and 500,000 b/d in 1986. First-stage development work will proceed on the assumption that the ultimate capacity target of 1.3 million b/d will be reached. However, a final decision on implementation of stage two will not be made until stage one has been completed, and no timetable has been set.

Offshore Facilities

The heart of the Upper Zakum development will consist of an offshore gathering system of 124 production platforms tied in to a central processing complex through four separator platforms.

Upper Zakum: Distribution of New Wellhead Platforms

Number of Wellhead Platforms

Separation Platform	At Completion of First Stage (1986) 6-Well Platform	4-Well Platform	Total	At Completion of Second Stage 6-Well Platform	4-Well Platform	Total
Number 1	8	9	17	8	16	24
Number 2	9	9	18	9	23	32
Number 3	8	8	16	8	14	22
Number 4	10	9	19	10	17	27
Total	35	35	70	35	70	105

Wellhead Platforms

In the first stage of development, 70 wellhead platforms will be installed. Thirty-five of the platforms will consist of six double-string production wells * and six gas-injection wells for artificial lift. The other 35 platforms will consist of four double-string production wells and four gas-injector wells. In addition to the 70 platforms to be installed, 19 single-well platforms currently in the ADMA system will be tied into the development. Fourteen of these existing wells will be completely integrated into the new Upper Zakum system, while five of the platforms, which produce from both Upper and Lower Zakum, will be shared with ADMA. These 369 production wells on 89 platforms will result in productive capacity of 500,000 b/d. Delivery of the 70 new platform decks for the first stage of the project is scheduled to begin in second half 1978 and be completed in early 1982.

According to the plan, 35 additional platforms would be installed during the second stage of the project. Each platform would have four double-string production wells and four gas-injector wells. At this point, the Upper Zakum development would

* A double-string well has two separate "strings" or pipes leading to two different producing horizons. Separate pipes are required when pressure differentials of the producing zones are too great to be handled by a single pipe.

have a total of 509 production wells on 124 platforms. Not all 509 wells would necessarily continue as production wells during the life of the project. ZADCO has made provisions in the development program for changing any well during its lifetime from a producer to an injector.

Each individual wellhead platform will electronically relay all pertinent data on its condition and crude-flow rates to an operator in the central complex. While each platform can be locally operated, human intervention on the wellhead platform will normally be limited to:

- Bringing a well onstream.
- Drilling or work-over activity.
- Weekly or biweekly spot checks of equipment.
- Wireline work, consisting of bottom-hole pressure and temperature checks.
- Testing of a production well's performance.

Separation Platforms

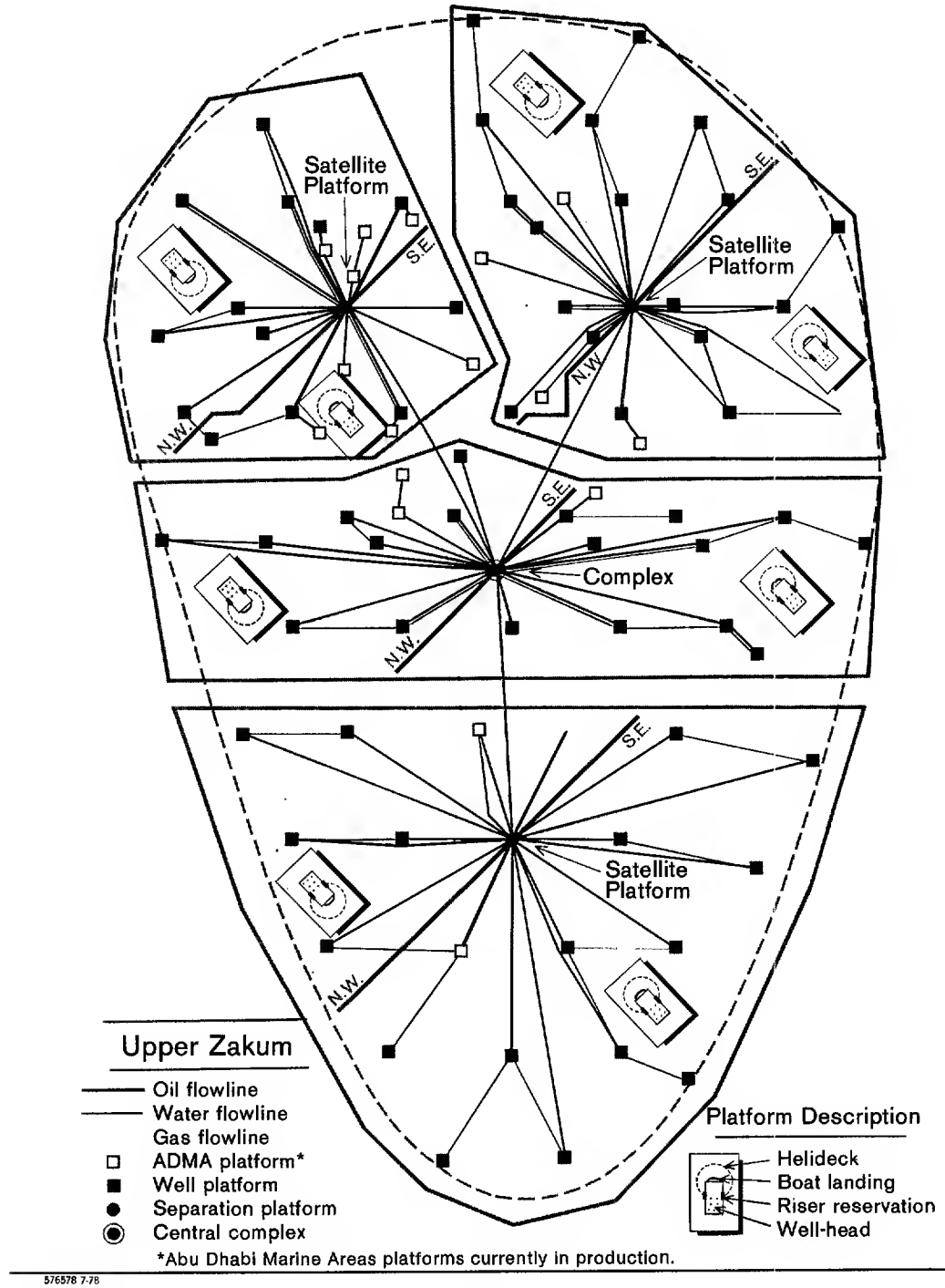
The first-stage development program calls for the installation of four separator platforms, three as satellite platforms and one as part of the central complex. These platforms will separate gas, oil, and water and will have facilities for oily water disposal. Treated crude will be pumped to the central complex. A collection and compression unit will send separated gas to the central complex for further treatment.

The satellite platforms will not normally be inhabited. All necessary data will be relayed to the central complex control room. However, an accommodation block with control facilities for start-up and maintenance work will be provided on the satellite platforms. The separator platform associated with the central complex will be physically connected to the main accommodation block and control room.

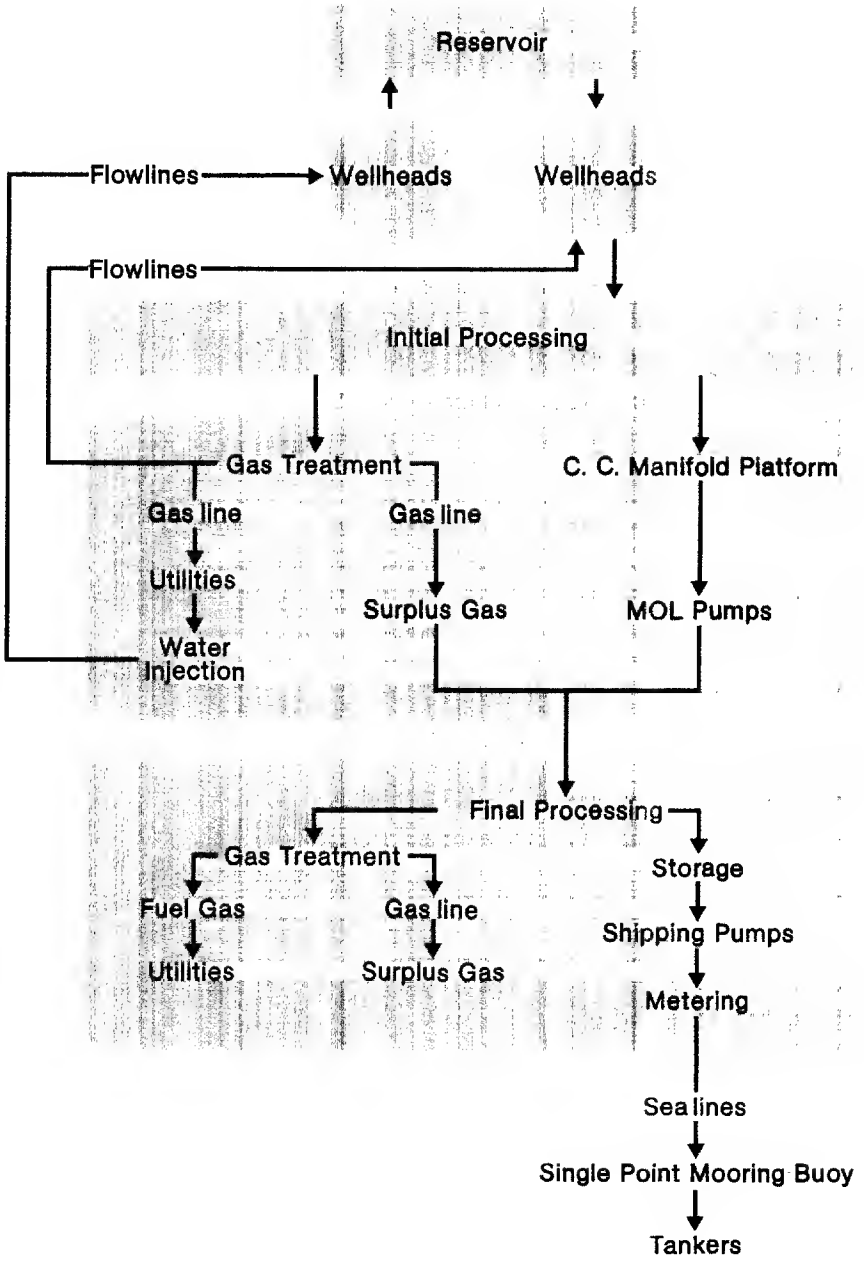
Central Complex

The central complex will consist of four individual platforms in addition to the separator platform:

- ***A gas-treatment and oil-expedition platform*** will receive first-stage treated gas and oil from the four separator platforms. A series of pumps will



Upper Zakum: Production Flow Pattern



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expedite the flow of crude through the main oil line to onshore facilities for final treatment. A gas-treatment plant will provide condensate removal and drying facilities. At this point the gas will follow one of three alternative paths. It will either be pumped back to the wellhead platforms for injection, prepared for use as a fuel in the offshore power station and water-treatment plant, or compressed and piped to Zirku Island for final treatment.

- ***A power/utility platform*** will be equipped with gas turbine generators to supply power for the central complex.

- ***The accommodation platform*** will consist of living quarters for up to 220 people, a workshop, and the main control center for the entire offshore development.

- ***A water injection platform*** will, in the second stage, consist of two plants for processing and expediting injection water for the pressure maintenance program. These plants will filter, chemically treat, and remove dissolved air from nearly 2 million b/d of water before pumping it to the injection wells.

Zirku Island

Sixty kilometers east of the Zakum oilfield is Zirku Island, where final processing of crude and gas will take place. Final-stage gas-oil separators and desalters for salt water removal will treat the crude before it is pumped into storage. Facilities for the storage of 6 million barrels of crude will be available on Zirku. Sea lines will connect the tank farm to the offshore loading facilities. Four single-point mooring buoys will be installed approximately 20 to 25 kilometers north of Zirku. Gas will also undergo final treatment for use on Zirku as fuel. Surplus gas will be compressed and exported.

All pertinent data on operations will be relayed from the offshore Zakum complex to Zirku. This data will be combined with the information available on final-stage treatment and export operations to create a complete production profile, which will be transmitted to the Abu Dhabi office on a daily basis. The larger computer facilities in Abu Dhabi will determine desired rates of production, taking into account tanker scheduling, weather, and maintenance requirements.

Living accommodations will be constructed on Zirku for up to 500 people. The island will also contain a harbor, storage and workshop areas, and an airport.

Support Facilities

Support for the production and export facilities will come primarily from the head office in Abu Dhabi and from Sadiyat Island. The Abu Dhabi head office will be

responsible for final-job documentation and records management; it will also house the main computer facilities and the purchasing, accounts, and cost-control departments. Total employment of 400 to 500 people is envisioned. As in many areas of the Middle East, it will be necessary to construct a housing complex for the employees and their families. In addition to 300 apartments and 300 houses, the plan calls for the construction of a mosque, medical center, restaurant, schools, store, and recreational facilities. Sadiyat, a small coastal island, will serve primarily as a workshop and storage base with no permanent residences.

Financing

The total cost for developing Upper Zakum capacity to 500,000 b/d has been estimated at $2 billion to $3 billion.* Capital expenditures are estimated at more than $1.8 billion for the period 1978-84. This would bring capital costs for the development

Upper Zakum: Capital Expenditures

Million US $

	1978	1979	1980	1981	1982	1983	1984	Total
Budget	50	485	530	280	110	180	180	1,815
ADNOC	45	425	465	245	95	160	160	1,595
JODCO	5	60	65	35	15	20	20	220

of a daily barrel of capacity for Upper Zakum to about $5,000—substantially higher than costs in other Persian Gulf offshore fields and more than 50 percent higher than at the Forties field in the British North Sea. These high expenditures are caused by (1) relatively low average flow rates of 2,500 to 3,000 b/d per well, in contrast, for example, to average rates of more than 7,000 b/d at offshore Saudi oilfields, and (2) the incorporation of a complete gas and water treatment and injection package in the initial design. Operating costs for Upper Zakum are expected to reach $90 million per year by 1984 as capacity continues to come onstream.

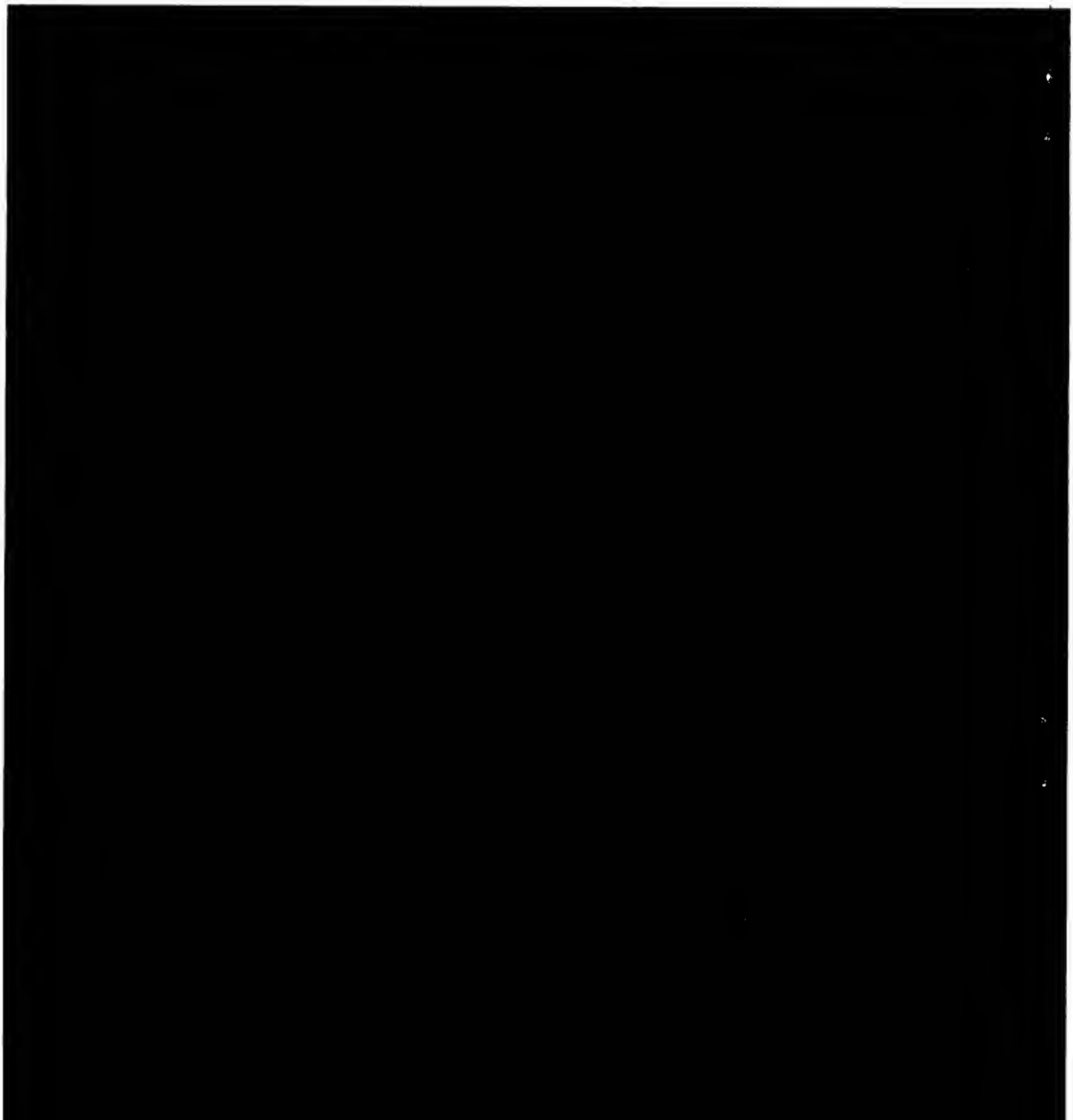
Upper Zakum: Operating Costs

Million US $

	1980	1981	1982	1983	1984
Budget	40	60	80	90	90
ADNOC	35	55	70	80	80
JODCO	5	5	10	10	10

* This excludes any expenditures for distribution of surplus associated gas.

Extrapolating these expenditures through the second stage of development (probably into the early 1990s, assuming no major project slippages), the 1.3 million b/d of capacity would cost in the neighborhood of $5 billion. Many support facilities completed in the first stage will not have to be duplicated, which ordinarily would reduce the marginal cost per daily barrel of capacity in the second stage. Nevertheless, experience in offshore oil development in the last decade has shown that inflation in equipment supply and service costs will likely make the $5 billion projection very conservative. (Confidential)



National
Foreign
Assessment
Center

International Energy Statistical Review

12 July 1978

ER IESR 78-010
12 July 1978

Approved For Release 2002/05/20 : CIA-RDP80T00702A001100010011-6

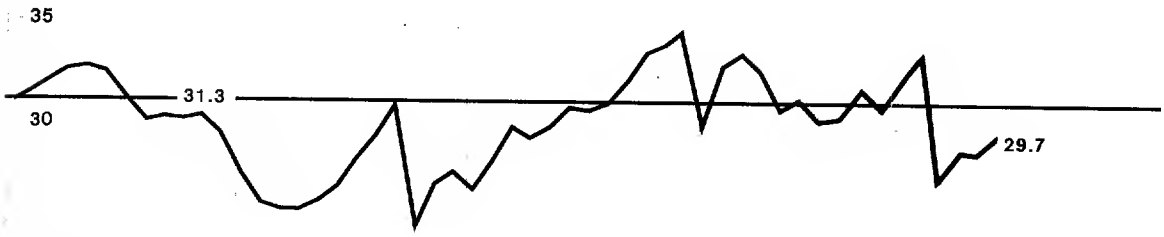
STATISTICAL REVIEW

FREE WORLD OIL PRODUCTION[1] MILLION B/D

Semilogarithmic Scale

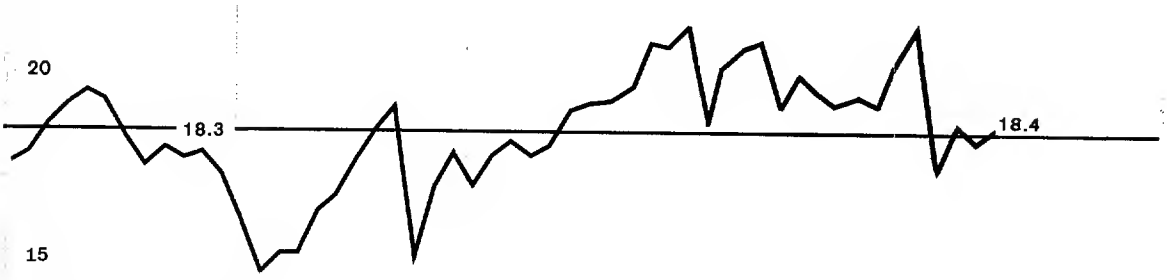
TOTAL

OPEC



OAPEC

Including Bahrain, Egypt, and Syria which are not members of OPEC.



Non-OPEC

Non-Arab OPEC

JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT JAN APR JUL OCT

1974 1975 1976 1977 1978

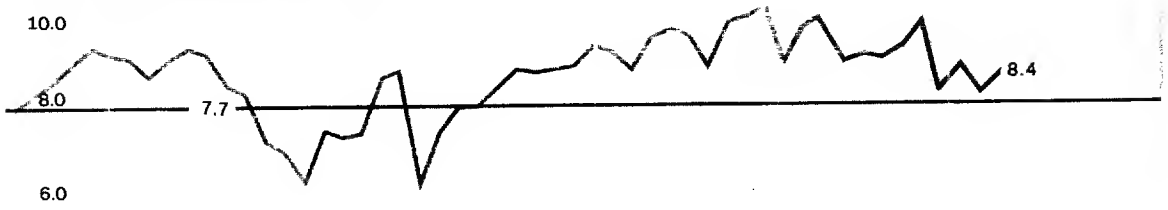
[1]Data include natural gas liquids.

OAPEC OIL PRODUCTION

Semilogarithmic Scale

Saudi Arabia

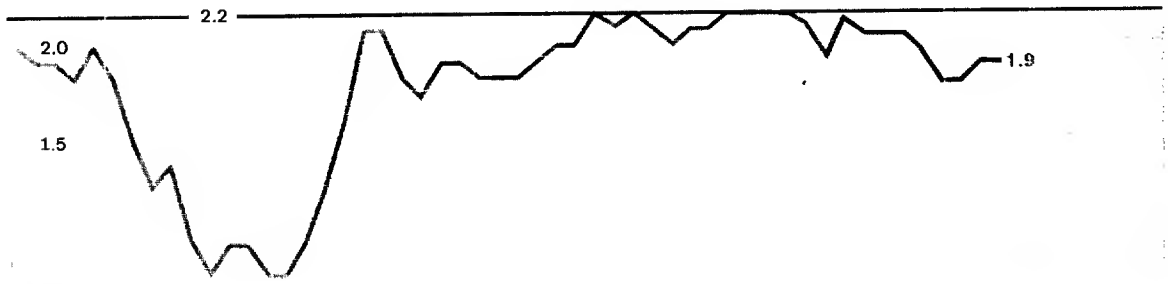
Including about one-half of Neutral Zone production.



Kuwait

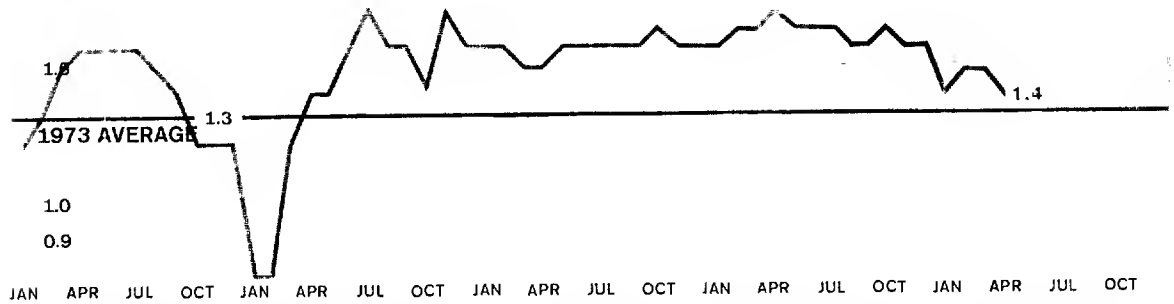
Including about one-half of Neutral Zone production.

Libya

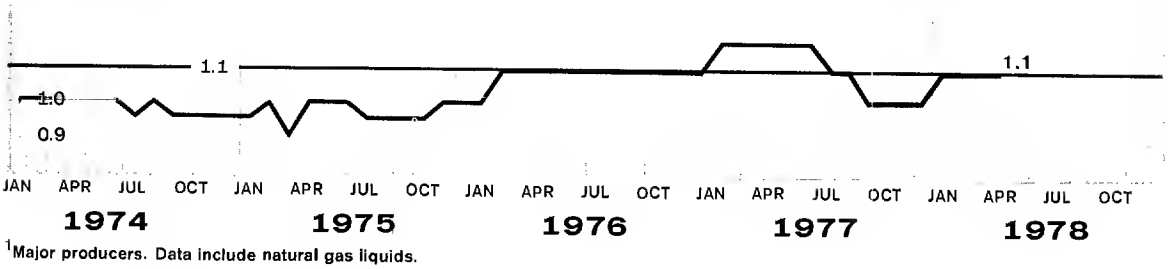


Iraq

Abu Dhabi



Algeria

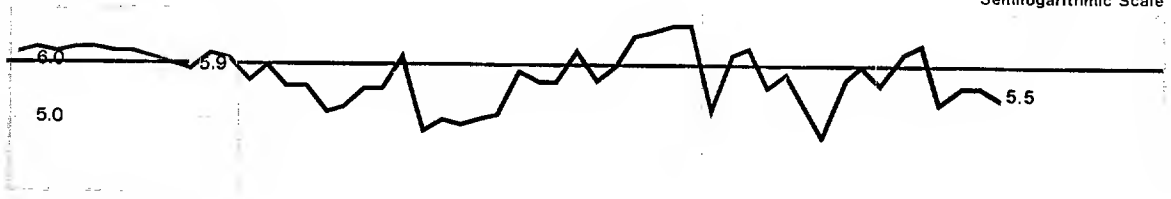


[1]Major producers. Data include natural gas liquids.

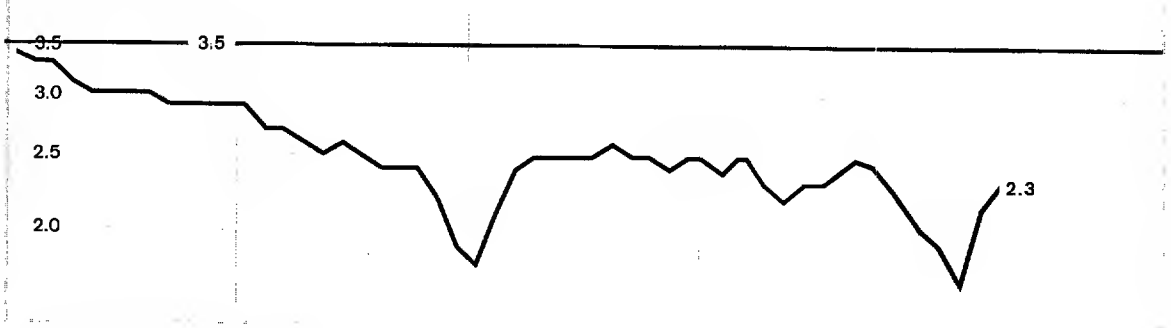
NON-ARAB OPEC OIL PRODUCTION[1] MILLION B/D

Iran

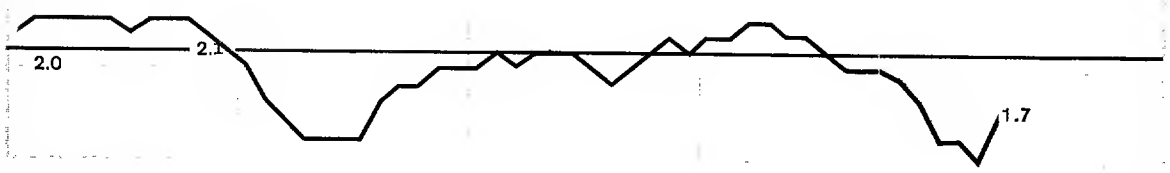
Semilogarithmic Scale



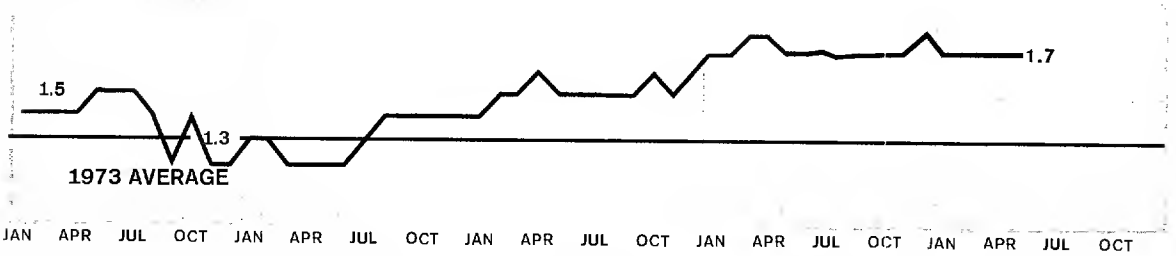
Venezuela



Nigeria



Indonesia



[1]Major producers. Data include natural gas liquids.

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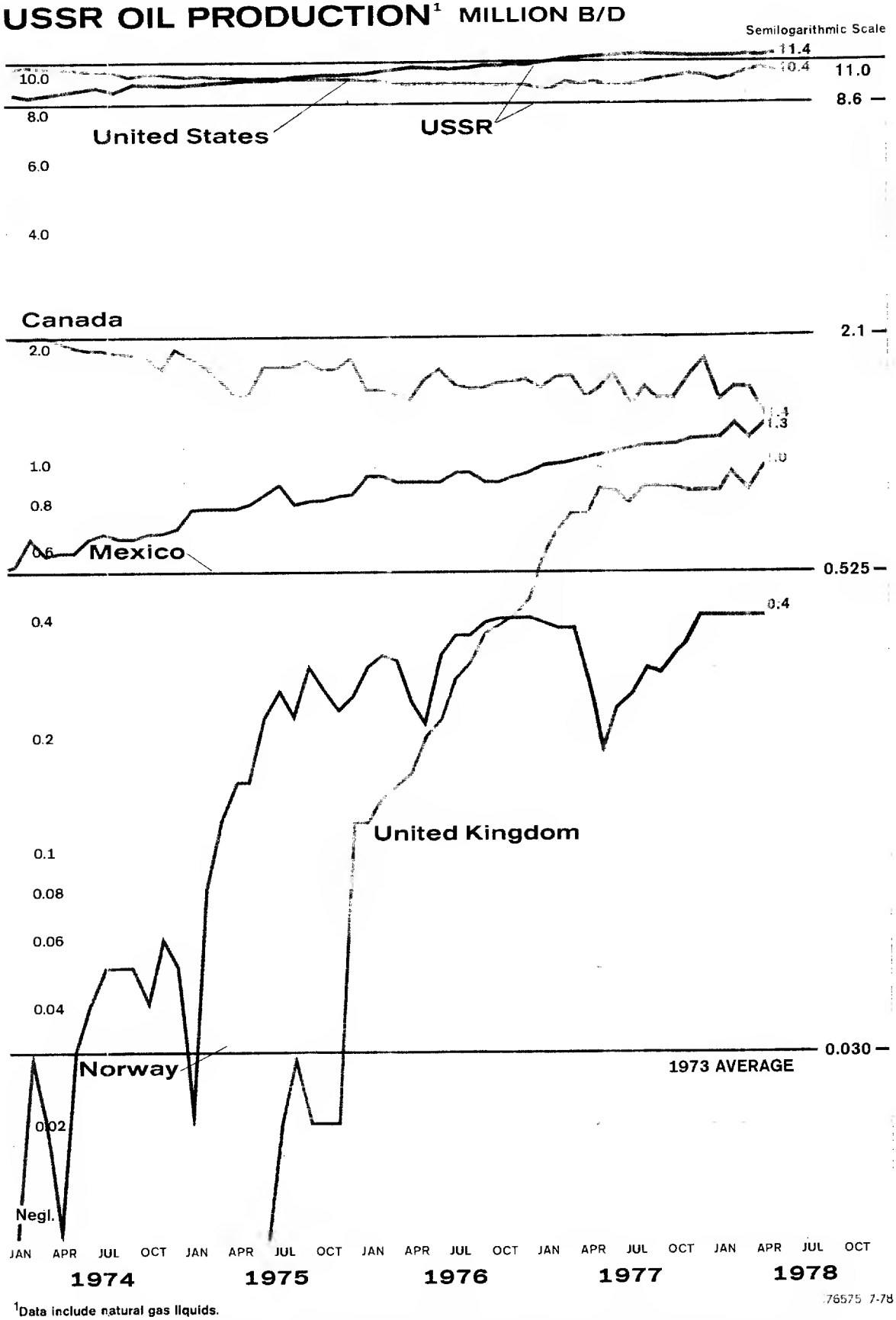
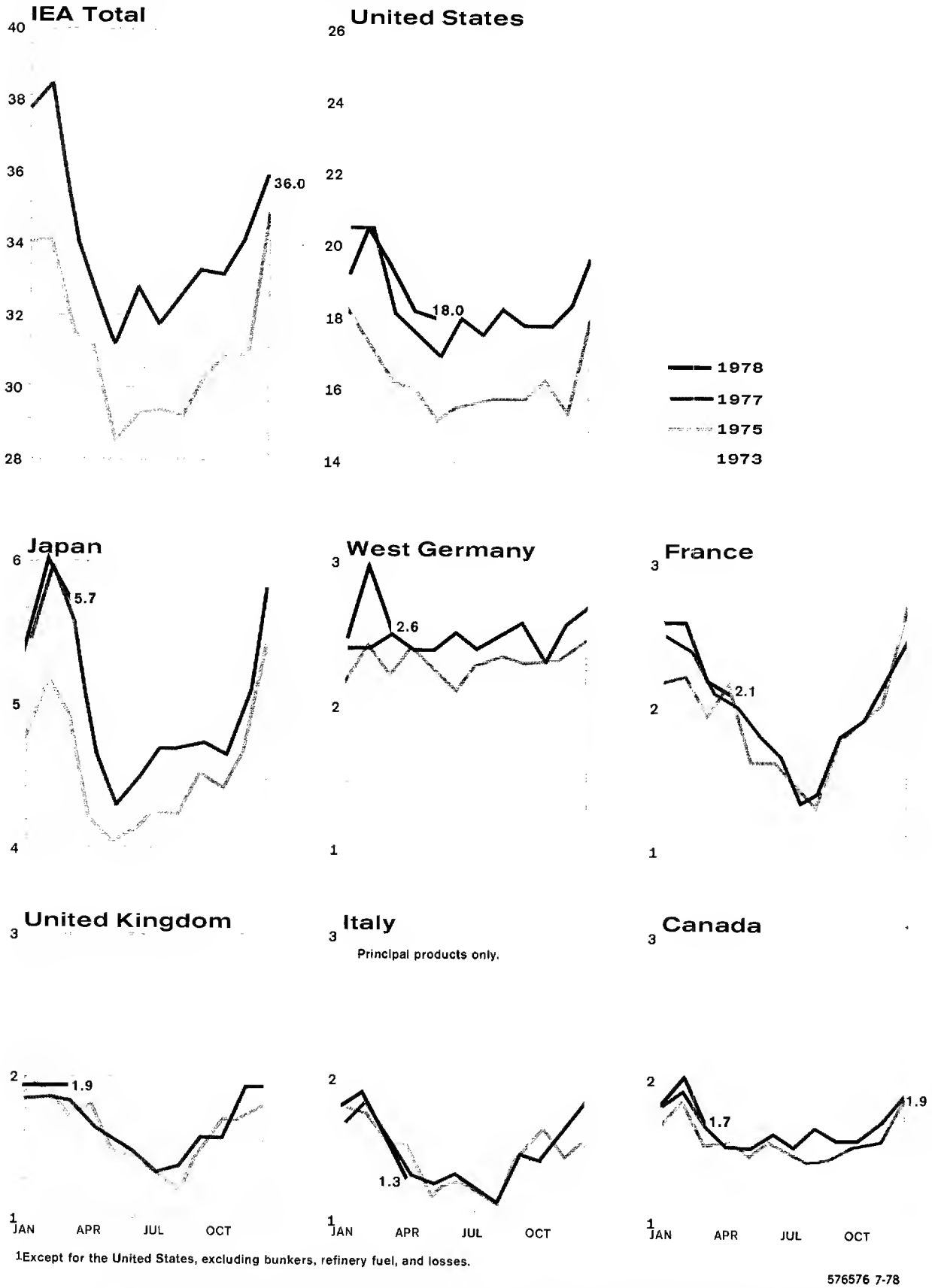
FREE WORLD AND USSR OIL PRODUCTION[1] MILLION B/D



[1]Data include natural gas liquids.

INLAND OIL CONSUMPTION[1] MILLION B/D



Principal products only.

[1]Except for the United States, excluding bunkers, refinery fuel, and losses.

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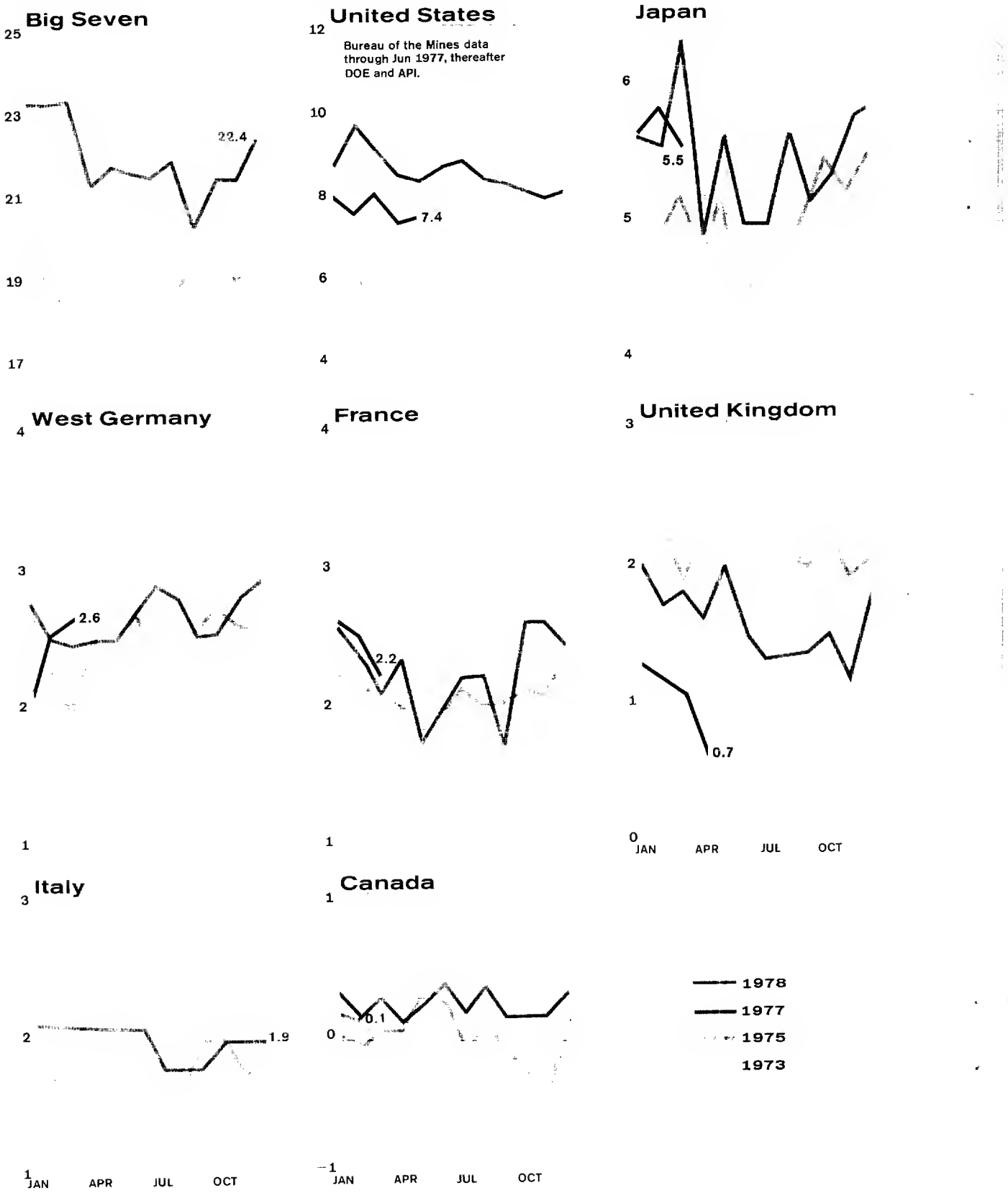
NET OIL IMPORTS MILLION B/D



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World Crude Oil Production, Excluding Natural Gas Liquids

Thousand b/d

					1978				
					Preliminary				
	1973	1975	1976	1977	Jan	Feb	Mar	Apr	May
World	55,740	52,990	57,300	59,520	56,520	57,950	58,340	59,260	
Free World	45,835	41,470	45,060	46,610	43,230	44,560	44,880	45,770	
Western hemisphere	16,130	14,135	13,780	14,040	13,790	13,750	14,580	14,980	
United States	9,210	8,375	8,130	8,210	8,340	8,380	8,720	9,010	8,840
Venezuela	3,365	2,345	2,295	2,240	1,780	1,620	2,060	2,230	
Canada	1,800	1,460	1,300	1,320	1,240	1,310	1,320	1,150	
Mexico	450	715	800	980	1,110	1,120	1,100	1,140	
Argentina	420	390	390	430	430	430	440	450	
Ecuador	210	160	185	180	180	170	190	230	
Other	675	690	680	680	710	720	750	770	
Eastern hemisphere	29,705	27,335	31,280	32,570	29,440	30,810	30,300	30,790	
Western Europe	370	550	855	1,370	1,580	1,640	1,540	1,660	
Norway	30	190	280	280	390	380	360	370	
United Kingdom	Negl.	20	245	770	880	950	870	980	
Other	340	340	330	320	310	310	310	310	
Middle East	21,215	19,590	22,145	22,240	19,570	20,910	20,420	20,690	
Saudi Arabia [1]	7,595	7,075	8,575	9,200	7,740	8,350	7,670	8,060	
Iran	5,860	5,350	5,885	5,660	5,290	5,530	5,600	5,430	
Kuwait [1]	3,020	2,085	2,145	1,970	1,720	1,730	2,140	2,030	1,810
Iraq	2,020	2,260	2,415	2,330	2,000	2,300	2,100	2,300	
United Arab Emirates	1,535	1,665	1,935	2,010	1,740	1,880	1,850	1,730	
Abu Dhabi	1,305	1,370	1,585	1,660	1,370	1,500	1,460	1,350	
Dubai	230	255	310	320	340	350	360	360	
Sharjah	...	40	40	30	30	30	30	20	
Qatar	570	440	495	430	450	480	420	510	380
Oman	295	340	365	340	320	330	330	320	
Syria	100	185	200	190	200	200	200	200	
Other	220	190	130	110	110	110	110	110	
Africa	5,900	4,980	5,800	6,190	5,460	5,420	5,470	5,610	
Nigeria	2,055	1,785	2,070	2,100	1,640	1,570	1,520	1,690	
Libya	2,175	1,480	1,935	2,080	1,790	1,810	1,880	1,860	
Algeria	1,070	960	990	1,040	1,000	1,000	1,000	1,000	
Gabon	150	225	225	230	220	220	220	220	
Egypt	165	250	330	420	440	450	480	480	
Angola/Cabinda	160	140	110	170	200	200	200	190	
Other	125	140	140	150	170	170	170	170	
Asia-Pacific	2,220	2,215	2,480	2,770	2,830	2,840	2,870	2,830	
Australia	370	410	425	430	450	450	450	420	
Indonesia	1,340	1,305	1,505	1,690	1,700	1,700	1,710	1,690	1,700
Malaysia-Brunei	320	300	330	400	420	420	430	440	
Other	190	200	220	250	260	270	280	280	
Communist Countries	9,905	11,520	12,240	12,910	13,290	13,390	13,460	13,490	
USSR	8,420	9,630	10,170	10,700	10,900	11,000	11,070	11,100	
China	1,090	1,490	1,670	1,810	1,990	1,990	1,990	1,990	
Romania	285	290	290	290	290	290	290	290	
Other	110	110	110	110	110	110	110	110	

[1] Including the share of Neutral Zone crude oil production which amounted to about 220,000 b/d for Saudi Arabia and 250,000 b/d for Kuwait in April 1978.

Free World Crude Oil Production, Including Natural Gas Liquids

Thousand b/d

					1978				
					Preliminary				
	1973	1975	1976	1977	Jan	Feb	Mar	Apr	May
Free World	**48,460**	**44,075**	**47,735**	**49,405**	**46,230**	**47,560**	**47,880**	**48,770**	
Non-OPEC Producers	**17,150**	**16,535**	**16,580**	**17,680**	**18,230**	**18,450**	**18,770**	**19,040**	
United States	10,950	10,010	9,735	9,830	9,920	9,960	10,300	10,590	10,420
Canada	2,120	1,770	1,585	1,610	1,530	1,600	1,610	1,440	
United Kingdom	5	30	260	800	920	990	910	1,020	
Norway	30	195	300	300	425	415	395	405	
Mexico	525	805	895	1,085	1,245	1,255	1,235	1,275	
Other	3,520	3,725	3,805	4,055	4,190	4,230	4,320	4,310	
OPEC	**31,310**	**27,540**	**31,155**	**31,725**	**28,000**	**29,110**	**29,110**	**29,730**	
Saudi Arabia [1]	7,685	7,215	8,760	9,415	8,040	8,650	7,970	8,360	
Kuwait [1]	3,080	2,135	2,195	2,025	1,820	1,830	2,240	2,130	1,910
Libya	2,210	1,505	1,975	2,120	1,830	1,850	1,920	1,900	
Iraq	2,020	2,260	2,415	2,335	2,005	2,305	2,105	2,305	
United Arab Emirates	1,535	1,665	1,935	2,025	1,770	1,910	1,880	1,760	
Abu Dhabi	1,305	1,370	1,585	1,675	1,390	1,520	1,480	1,370	
Dubai	230	255	310	320	350	360	370	370	
Sharjah	...	40	40	30	30	30	30	20	
Algeria	1,100	1,020	1,075	1,140	1,115	1,115	1,115	1,115	
Qatar	570	450	505	435	455	485	425	515	385
Iran	5,900	5,395	5,930	5,700	5,335	5,575	5,645	5,475	
Venezuela	3,455	2,420	2,370	2,320	1,860	1,700	2,140	2,310	
Nigeria	2,055	1,785	2,070	2,100	1,640	1,570	1,520	1,690	
Indonesia	1,340	1,305	1,515	1,700	1,730	1,730	1,740	1,720	1,730
Gabon	150	225	225	230	220	220	220	220	
Ecuador	210	160	185	180	180	170	190	230	

[1] Including the share of Neutral Zone production.

World Natural Gas Liquids (NGL) Production [1]

Thousand b/d

	1973	1975	1976	1977	1978
World	2,795	2,810	2,890	3,030	
Free World	2,625	2,605	2,675	2,795	3,000
OPEC	345	405	500	565	750
Non-OPEC	2,280	2,200	2,175	2,230	2,250
Western Hemisphere	2,270	2,155	2,105	2,140	2,130
United States	1,740	1,635	1,605	1,620	1,580
Venezuela	90	75	75	80	80
Canada	320	310	285	290	290
Mexico	75	90	95	105	135
Other	45	45	45	45	45
Eastern Hemisphere	355	450	570	655	870
Western Europe	40	50	70	85	110
Norway	...	5	20	20	35
United Kingdom	5	10	15	30	40
Other	35	35	35	35	35
Middle East	190	245	290	335	485
Saudi Arabia	90	140	185	215	300
Iran	40	45	45	40	45
Kuwait	60	50	50	55	100
Qatar	...	10	10	5	5
Abu Dhabi	...	...	...	15	20
Dubai	...	...	...	...	10
Iraq	...	...	...	5	5
Africa	65	85	125	140	155
Libya	35	25	40	40	40
Algeria	30	60	85	100	115
Asia-Pacific	60	70	85	95	120
Australia	50	50	50	55	60
Indonesia	...	...	10	10	30
Other	10	20	25	30	30
Communist Countries	170	205	215	235	
USSR	160	190	200	220	
China	N.A.	N.A.	N.A.	N.A.	
Other	10	15	15	15	

[1] Estimated.

OAPEC [1] and OPEC [2] Countries: Crude Oil Production, Excluding Natural Gas Liquids

Thousand b/d

					1978			
					Preliminary			
	1973	1975	1976	1977	Jan	Feb	Mar	Apr
Total OAPEC (thousand b/d)	18,090	16,165	18,730	19,380	16,770	17,880	17,400	17,840
% change from Sep 1973 [3]		−19	−7	−3	−16	−11	−13	−11
% change from Dec 1976 [4]				−8	−20	−15	−17	−15
Total OPEC (thousand b/d)	30,965	27,135	30,655	31,160	27,250	28,360	28,360	28,980
% change from Sep 1973 [3]		−18	−7	−5	−17	−14	−14	−12
% change from Dec 1976 [4]				−9	−20	−17	−17	−15

[1] The members of the Organization of Arab Petroleum Exporting Countries are Abu Dhabi, Algeria, Bahrain, Egypt, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and Syria.

[2] The membership of the Organization of Petroleum Exporting Countries consists of OAPEC members (excluding Bahrain, Egypt, and Syria), plus Dubai, Ecuador, Gabon, Indonesia, Iran, Nigeria, Sharjah, and Venezuela.

[3] In Sep 1973, the pre-crisis level of output, OAPEC countries produced 20,038 b/d and OPEC countries 32,956 b/d.

[4] In Dec 1976, the post-crisis peak of output, OAPEC countries produced 21,060 b/d and OPEC countries 34,070 b/d.

OPEC: Crude Oil Productive Capacity

Thousand b/d

	Capacity			Production	
	Maximum			Latest Post-Embargo Peak	Current
	Installed [1]	Sustainable [2]	Available [3]		
Total	40,815	36,605	33,200		
Algeria	1,200	1,080	1,080	1,080 (Jan 77)	1,000 (Apr 78)
Ecuador	250	225	225	260 (May 74)	230 (Apr 78)
Gabon	250	225	225	230 (Dec 77)	225 (Apr 78)
Indonesia	1,800	1,700	1,700	1,740 (Mar 77)	1,690 (Apr 78)
Iran	7,000	6,500	6,500	6,680 (Nov 76)	5,430 (Apr 78)
Iraq	3,150	3,000	3,000	2,900 (Dec 77)	2,300 (Apr 78)
Kuwait [4]	3,200	3,000	2,000	2,990 (Dec 76)	1,650 (May 78)
Libya	2,500	2,300	2,300	2,210 (Mar 77)	1,860 (Apr 78)
Neutral Zone [5]	680	600	600	670 (Dec 76)	470 (Apr 78)
Nigeria	2,400	2,300	2,300	2,330 (Oct 74)	1,690 (Apr 78)
Qatar	650	600	600	610 (Dec 75)	380 (May 78)
Saudi Arabia [4]	12,500 [6]	10,100	8,500 [7]	9,990 (Apr 77)	7,840 (Apr 78)
United Arab Emirates	2,535	2,375	1,870		
Abu Dhabi	2,100	1,965	1,460	1,830 (Jul 75)	1,350 (Apr 78)
Dubai	380	360	360	360 (Apr 78)	360 (Apr 78)
Sharjah	55	50	50	60 (Dec 74)	20 (Apr 78)
Venezuela	2,700	2,600	2,300	2,950 (Jun 74)	2,230 (Apr 78)

[1] Installed capacity, also called nameplate or design capacity, includes all aspects of crude oil production, processing, transportation, and storage. Installed capacity is generally the highest capacity estimate.

[2] Maximum sustainable or operational capacity is the maximum production rate that can be sustained for several months; it considers the experience of operating the total system and is generally some 90-95 percent of installed capacity. This capacity concept does not necessarily reflect the maximum production rate sustainable without damage to the fields.

[3] Available or allowable capacity reflects production ceilings applied by Abu Dhabi, Kuwait, Saudi Arabia, and Venezuela. These ceilings usually represent a constraint only on annual average output, and thus production may exceed the ceilings in a given month.

[4] Excluding share of capacity in the Neutral Zone, shown separately.

[5] Capacity and production is shared about equally between Kuwait and Saudi Arabia.

[6] In Saudi Arabia, the concept of "facility," rather than "installed" capacity, is used. Facility capacity refers to the total installed capacity of gas-oil separating plants, main trunk pipelines, and oil-load terminals; it does not include the capacity of salt water-oil separators or flow lines.

[7] Recent statements by the Saudi Oil Minister are ambiguous about whether the production ceiling is 8.5 million b/d or 8.0 million b/d.

A Note on Petroleum Reserves

Any estimate of oil and natural gas reserves must be treated as a rough approximation. Few countries publish official reserve estimates, and there is no consistent rigorous definition of reserves. Moreover, the volume of oil and/or gas in place, even in a well-delineated field, can never be precisely accurate; estimates of commercially recoverable oil and natural gas are usually made not by reference to existing technology but by reference to the production system currently in use, and even this can provide only an approximation. Assessments of proved reserves therefore do not mean absolute world availability; they are only an indication of the quantity of oil that is technically and economically feasible to extract with current techniques at current prices.

CIA's reserve figures are for *proved and probable* reserves and are based on the best available published information; where there are conflicting data, we use our own judgmental analysis. CIA uses the restrictive definition of *probable* reserves (as differentiated from *possible* reserves) common in the industry. Our *proved and probable* figure does not differ greatly from the *proved* figure in many cases, such as Venezuela, Iran, and Libya. In these countries, extensive exploration has taken place and extensions of known fields are considered unlikely. In other cases—such as Saudi Arabia, Mexico, and the United Kingdom—differences between *proved* and *proved and probable* reserves are considerably larger.

Estimated Proved and Probable Petroleum Reserves

Area and Country	Crude Oil Billion Barrels	Natural Gas Trillion Cubic Feet
World	**657**	**2,626** [1]
Free World	**592**	**1,764**
Western Hemisphere	96	426
United States [2]	39	219
Mexico	25	43
Venezuela	14	43
Canada [2]	8	71
Ecuador	2	11
Argentina	2	11
Brazil	1	7
Colombia	1	7
Peru	2	7
Trinidad and Tobago	2	7
Eastern Hemisphere	496	1,338
Middle East	384	845
Saudi Arabia	150	106
Kuwait	71	35
Iran [3]	60	600
Iraq	36	35
United Arab Emirates	34	35
Neutral Zone	17	7
Qatar	7	18
Oman	6	3
Syria	2	3
Other	1	3
Africa	59	211
Libya	25	25
Nigeria	19	46
Algeria	7	127
Egypt	4	3
Gabon	1	Negl.
Angola-Cabinda	1	Negl.
Tunisia	1	7
Other	1	3
Western Europe	31	177
United Kingdom	20	46
Norway	8	25
Netherlands	Negl.	71
Spain	1	Negl.
Other	2	35
Asia-Pacific	22	105
Indonesia	14	21
Brunei	2	11
Malaysia	2	14
Australia	2	35
India	2	3
Pakistan	Negl.	21
Communist Countries	**65**	**862**
USSR	40	812
China	20	25
Other	5	25

[1] Equivalent to 470 billion barrels of oil.
[2] Including Arctic gas deposits and natural gas liquids.
[3] Including recent discoveries.

Estimated Imports of Crude Oil and Refined Products
1977

Thousand b/d

	US [1]	Japan	Canada	Western Europe	West Germany	France	UK	Italy	Netherlands	Spain	Other Western Europe
Algeria	556	3	...	407	199	98	7	30	6	23	44
Bahrain	8	38	...	2	...	...	2	...	...	...	...
Egypt	28	...	...	25	2	. 5	18	...	...	...	...
Iraq	94	151	18	1,221	22	365	110	274	69	111	270
Kuwait	54	518	4	656	29	72	184	152	123	24	72
Libya	849	20	...	1,039	394	55	44	296	23	83	144
Qatar	97	38	...	160	19	63	33	17	11	...	17
Saudi Arabia	1,513	1,772	156	3,299	402	870	369	629	345	317	367
Syria	2	...	...	70	26	44	...	...	...	...	...
United Arab Emirates	424	546	6	798	171	234	84	56	82	83	88
OAPEC	**3,625**	**3,086**	**184**	**7,677**	**1,264**	**1,806**	**851**	**1,454**	**659**	**641**	**1,002**
Ecuador	59	...	...	...	...	...	...	...	...	...	...
Gabon	57	...	...	59	8	38	...	2	...	5	6
Indonesia	566	721	...	20	14	...	...	...	2	...	4
Iran	799	870	118	1,885	315	189	259	293	273	245	311
Nigeria	1,237	...	4	619	180	157	27	7	183	...	65
Venezuela	891	7	287	153	20	17	21	29	4	20	42
OPEC [2]	**7,196**	**4,646**	**593**	**10,316**	**1,773**	**2,158**	**1,138**	**1,785**	**1,121**	**911**	**1,430**
Canada	454	...	...	2	...	...	...	...	...	...	2
Mexico	181	...	...	...	...	...	...	...	...	...	...
Other [3]	834	770	120	2,693	967	307	533	505	240	103	2,313
Total	8,703	5,454	713	13,108	2,768	2,514	1,691	2,290	1,361	1,014	3,745

[1] Products traced to source of crude.
[2] OAPEC members excluding Bahrain, Egypt, and Syria plus other countries shown.
[3] Includes unknown.

Selected Developed Countries: Crude Oil Imports, by Source

Thousand b/d

	Sep 1973 (Pre-Crisis Level)	1975	1976	1977	1978 Jan	1978 Feb	1978 Mar	Percent of Total Sep 1973	Percent of Total Mar 1978
United States									
Algeria	124	264	408	538	667	617	663	3.6	11.2
Egypt	...	5	17	36	..	...	...	...	...
Iraq	17	2	26	76	69	44	18	0.5	0.3
Kuwait	44	4	1	42	18	...	38	1.3	0.6
Libya	153	223	444	696	532	559	538	4.4	9.1
Qatar	41	18	24	67	45	68	93	1.2	1.6
Saudi Arabia	599	701	1,222	1,369	1,198	970	1,109	17.3	18.8
United Arab Emirates [1]	88	117	254	331	349	486	296	2.5	5.0
Other [2]	...	...	...	2	..	...	...	...	...
Total OAPEC	**1,066**	**1,334**	**2,396**	**3,157**	**2,878**	**2,744**	**2,755**	**30.7**	**46.7**
Ecuador	33	57	51	54	55	66	41	0.9	0.7
Gabon	...	27	26	35	21	60	29	...	0.5
Indonesia	249	379	537	502	401	366	466	7.2	7.9
Iran	205	278	298	525	649	526	547	5.9	9.3
Nigeria	409	746	1,014	1,123	815	747	927	11.8	15.7
Venezuela	405	395	241	249	152	107	130	11.7	2.2
Total OPEC [3]	**2,367**	**3,211**	**4,546**	**5,607**	**4,971**	**4,616**	**4,895**	**68.2**	**83.0**
Canada	998	600	371	278	243	260	252	28.8	4.3
Mexico	8	70	87	177	236	204	231	0.2	3.9
UK	...	Negl.	13	96	...	...	...	...	...
Norway	...	12	35	48	...	...	...	...	...
Other [4]	98	207	218	324	635	561	523	2.8	8.9
Total	**3,471**	**4,105**	**5,287**	**6,568**	**6,085**	**5,641**	**5,901**	**100.0**	**100.0**

Thousand b/d

	Sep 1973 (Pre-Crisis Level)	1975	1976	1977	1978 Jan	1978 Feb	Percent of Total Sep 1973	Percent of Total Feb 1978
Canada								
Algeria	...	Negl.	...	...	...	...	...	...
Egypt	...	....	...	...	...	...	...	...
Iraq	23	31	29	19	45	31	2.4	4.4
Kuwait	...	29	2	4	...	...	...	...
Libya	56	9	20	...	...	...	6.0	...
Qatar	...	2	...	...	...	...	...	...
Saudi Arabia	82	165	109	157	106	147	8.7	21.0
United Arab Emirates [1]	49	46	57	6	...	...	5.2	...
Other [2]	...	...	...	...	...	...	...	...
Total OAPEC	**210**	**282**	**217**	**186**	**151**	**178**	**22.3**	**25.5**
Ecuador	13	1	...	...	...	...	1.4	...
Gabon	...	3	...	...	...	...	...	...
Indonesia	...	...	...	...	...	...	...	...
Iran	149	202	157	121	97	245	15.9	35.1
Nigeria	39	17	28	5	...	...	4.1	...
Venezuela	485	265	269	258	236	162	51.6	23.2
Total OPEC [3]	**896**	**770**	**671**	**570**	**484**	**585**	**95.3**	**83.7**
Other [4]	44	54	49	99	113	114	4.7	16.3
Total	**940**	**824**	**720**	**669**	**597**	**699**	**100.0**	**100.0**

Selected Developed Countries: Crude Oil Imports, by Source
(Continued)

Thousand b/d

	Sep 1973 (Pre-Crisis Level)	1975	1976	1977	1978 Jan	1978 Feb	1978 Mar	Percent of Total Sep 1973	Percent of Total Mar 1978
Japan									
Algeria	...	6	...	3	...	17	9	...	0.2
Egypt	...	...	Negl.	...	...	...	...	...	...
Iraq	...	92	127	151	172	268	82	...	1.7
Kuwait	488	416	342	398	542	387	420	10.0	8.6
Libya	31	59	41	20	...	...	14	0.6	0.3
Qatar	...	3	2	36	128	67	139	...	2.9
Saudi Arabia	1,148	1,355	1,572	1,622	1,629	1,799	1,528	23.5	31.4
United Arab Emirates [1]	511	408	530	545	454	544	498	10.5	10.2
Other [2]	...	...	...	...	...	...	...	...	...
Total OAPEC	**2,181**	**2,339**	**2,614**	**2,775**	**2,925**	**3,082**	**2,690**	**44.7**	**55.2**
Ecuador	...	...	...	...	...	...	...	...	...
Gabon	...	...	...	...	...	...	...	...	...
Indonesia	638	518	553	651	612	792	638	13.1	13.1
Iran	1,554	1,147	928	812	803	793	957	31.9	19.6
Nigeria	101	71	17	...	...	...	...	2.1	...
Venezuela	7	5	6	6	13	8	...	0.1	...
Total OPEC [3]	**4,481**	**4,080**	**4,118**	**4,244**	**4,353**	**4,675**	**4,285**	**91.9**	**88.0**
Other [4]	397	459	483	547	601	455	586	8.1	12.0
Total	**4,878**	**4,539**	**4,601**	**4,791**	**4,954**	**5,130**	**4,871**	**100.0**	**100.0**

Thousand b/d

	Sep 1973 (Pre-Crisis Level)	1975	1976	1977	1978 1st Qtr	1978 Apr	Percent of Total Sep 1973	Percent of Total Apr 1978
United Kingdom								
Abu Dhabi	28	47	29	43	54	23	1.5	2.3
Algeria	46	29	18	7	...	...	2.4	...
Egypt	...	16	3	14	10	33	...	3.2
Iraq	67	52	105	110	153	98	3.5	9.6
Kuwait	293	218	229	184	277	185	15.3	18.2
Libya	98	53	45	40	38	81	5.1	8.0
Qatar	73	77	94	33	8	...	3.8	...
Saudi Arabia	530	444	370	369	354	93	27.6	9.1
Other [2]	...	16	3	...	...	...	...	...
Total OAPEC	**1,135**	**952**	**896**	**800**	**894**	**513**	**59.2**	**50.4**
Dubai	48	30	45	41	42	86	2.5	8.4
Ecuador	...	...	...	...	...	...	...	...
Gabon	...	...	...	...	...	...	...	...
Indonesia	...	...	...	...	...	...	...	...
Iran	317	351	398	259	244	77	16.5	7.6
Nigeria	188	117	76	27	17	72	9.8	7.1
Sharjah	...	...	...	...	...	...	...	...
Venezuela	66	64	29	21	20	29	3.4	2.8
Total OPEC [3]	**1,754**	**1,482**	**1,438**	**1,134**	**1,207**	**744**	**91.5**	**73.1**
Other [4]	163	261	326	257	248	241	8.5	23.7
Total	**1,917**	**1,775**	**1,770**	**1,405**	**1,465**	**1,018**	**100.0**	**100.0**

Selected Developed Countries: Crude Oil Imports, by Source
(Continued)

Thousand b/d

	Sep 1973 (Pre-Crisis Level)	1975	1976	1977	1978 Jan	1978 Feb	1978 Mar	Percent of Total Sep 1973	Percent of Total Mar 1978
West Germany									
Algeria	239	204	210	197	170	245	216	10.4	11.8
Egypt	...	4	...	...	...	...	8	...	0.4
Iraq	43	28	35	22	96	...	...	1.9	...
Kuwait	102	54	25	15	19	5	12	4.4	0.7
Libya	418	296	421	383	336	329	318	18.2	17.3
Qatar	18	25	24	19	16	45	27	0.8	1.5
Saudi Arabia	710	371	378	401	189	223	302	30.9	16.4
United Arab Emirates [1]	162	158	125	171	162	102	209	7.1	11.4
Other [2]	26	16	25	26	23	7	11	1.1	0.6
Total OAPEC	**1,718**	**1,156**	**1,243**	**1,234**	**1,011**	**956**	**1,103**	**74.8**	**60.0**
Ecuador	...	...	...	...	...	...	...	...	...
Gabon	32	21	11	7	6	8	11	1.4	0.6
Indonesia	...	...	4	14	10	5	17	...	0.9
Iran	248	284	380	315	353	338	333	10.8	18.1
Nigeria	168	202	181	180	193	118	136	7.3	7.4
Venezuela	42	43	28	19	9	21	6	1.8	0.3
Total OPEC [3]	**2,182**	**1,686**	**1,822**	**1,743**	**1,559**	**1,439**	**1,587**	**95.0**	**86.4**
UK	...	...	14	70	99	87	121	...	6.6
Norway	Negl.	12	23	32	16	83	53	...	2.9
Other [4]	89	89	95	81	111	89	57	3.9	3.1
Total	**2,297**	**1,807**	**1,979**	**1,952**	**1,808**	**1,705**	**1,837**	**100.0**	**100.0**

Thousand b/d

	Sep 1973 (Pre-Crisis Level)	1975	1976	1977	1978 Jan	1978 Feb	1978 Mar	Percent of Total Sep 1973	Percent of Total Mar 1978
France									
Abu Dhabi	249	210	202	193	70	131	43	9.0	1.8
Algeria	227	118	95	98	93	83	107	8.2	4.6
Egypt	1	4	13	5	13	13	13	Negl.	0.6
Iraq	375	240	335	365	255	579	484	13.6	20.7
Kuwait	316	134	86	72	25	68	27	11.4	1.2
Libya	131	44	62	55	37	90	73	4.7	3.1
Qatar	69	47	58	63	67	53	47	2.5	2.0
Saudi Arabia	623	669	870	870	848	906	937	22.5	40.1
Other [2]	12	41	60	44	54	59	78	0.4	3.3
Total OAPEC	**2,003**	**1,507**	**1,781**	**1,765**	**1,462**	**1,982**	**1,809**	**72.5**	**77.5**
Dubai	27	43	33	41	20	90	49	1.0	2.1
Ecuador	...	...	...	...	...	...	...	...	...
Gabon	33	27	29	38	29	16	13	1.2	0.6
Indonesia	...	...	...	...	...	...	...	...	...
Iran	216	266	294	189	307	194	122	7.8	5.2
Nigeria	253	175	150	157	120	189	193	9.2	8.3
Sharjah	...	...	...	...	...	...	...	...	...
Venezuela	36	15	16	17	9	14	22	1.3	0.9
Total OPEC [3]	**2,555**	**1,988**	**2,230**	**2,158**	**1,880**	**2,413**	**2,117**	**92.4**	**90.7**
UK	...	...	7	33	...	49	53	...	2.3
Norway	...	18	46	26	29	16	40	...	1.7
Other [4]	196	69	61	84	123	82	34	7.1	1.5
Total	**2,764 [4]**	**2,120**	**2,417**	**2,350**	**2,099**	**2,632**	**2,335**	**100.0**	**100.0**

Selected Developed Countries: Crude Oil Imports, by Source
(Continued)

	Thousand b/d						Percent of Total	
	4th Qtr 1973 (Pre-Crisis Level)	1975	1976	1977 1st Half	1977 3d Qtr	1977 4th Qtr	4th Qtr 1973	4th Qtr 1977
Italy								
Algeria	61	77	51	21	39	32	2.4	1.5
Egypt	...	...	...	...	...	...	...	...
Iraq	383	374	312	331	174	252	15.2	11.7
Kuwait	212	82	47	143	142	166	8.4	7.7
Libya	597	260	340	301	241	329	23.7	15.3
Qatar	21	26	26	23	15	6	0.8	0.3
Saudi Arabia	692	527	545	653	601	585	27.5	27.2
United Arab Emirates [1]	...	33	50	66	37	52	...	2.4
Other [2]	...	...	...	...	...	...	...	...
Total OAPEC	**1,966**	**1,379**	**1,371**	**1,538**	**1,249**	**1,422**	**78.2**	**66.0**
Ecuador	...	...	...	...	...	...	...	...
Gabon	3	6	1	5	...	...	0.1	...
Indonesia	...	...	...	...	...	...	...	...
Iran	277	258	292	272	266	330	11.0	15.3
Nigeria	9	7	7	14	...	...	0.4	...
Venezuela	18	20	16	11	19	13	0.7	0.6
Total OPEC [3]	**2,273**	**1,670**	**1,687**	**1,840**	**1,534**	**1,765**	**90.4**	**81.9**
UK	...	...	13	2	...	...	...	...
Norway	...	...	...	...	4	...	...	...
Other [4]	241	271	371	344	373	389	9.6	18.1
Total	**2,514**	**1,941**	**2,071**	**2,186**	**1,911**	**2,154**	**100.0**	**100.0**

[1] Including oil imports from Abu Dhabi and possibly from Dubai and Sharjah, which are not members of OAPEC.
[2] Including, when applicable, Bahrain and Syria.
[3] Consisting of OAPEC members (excluding Bahrain, Egypt, and Syria) plus the other countries shown.
[4] Including data that cannot be distributed by area of origin.

Selected Developed Countries: Trends in Oil Trade

Thousand b/d

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
United States [1]													
1973													
Crude imports	2,732	2,873	3,162	3,049	3,215	3,220	3,501	3,593	3,471	3,740	3,452	2,891	3,244
Product imports	3,079	3,501	3,413	2,551	2,603	2,659	2,671	2,913	2,903	2,785	3,412	3,055	3,012
Total imports	5,811	6,374	6,575	5,600	5,818	5,879	6,172	6,506	6,374	6,525	6,864	5,946	6,256
Exports	210	260	224	275	237	215	240	217	242	221	202	227	231
Net imports	5,601	6,114	6,351	5,325	5,581	5,664	5,932	6,289	6,132	6,304	6,662	5,719	6,025
1975													
Crude imports	4,029	3,828	3,656	3,378	3,486	3,905	4,192	4,581	4,689	4,389	4,623	4,476	4,105
Product imports	2,832	2,348	2,074	1,662	1,728	1,502	1,767	1,717	2,115	1,940	1,796	1,949	1,951
Total imports	6,861	6,176	5,730	5,040	5,214	5,407	5,959	6,298	6,804	6,329	6,419	6,425	6,056
Exports	228	248	213	190	202	224	186	203	205	187	166	262	209
Net imports	6,633	5,928	5,517	4,850	5,012	5,183	5,773	6,095	6,599	6,142	6,253	6,163	5,847
1976													
Crude imports	4,594	4,208	4,738	4,790	4,669	5,621	5,792	5,556	5,875	5,689	5,946	5,925	5,287
Product imports	2,016	2,423	1,946	1,805	1,654	1,858	2,099	1,826	2,049	1,847	2,114	2,353	2,008
Total imports	6,610	6,631	6,684	6,595	6,323	7,479	7,891	7,382	7,924	7,536	8,060	8,278	7,295
Exports	156	241	185	222	180	213	242	220	196	198	348	309	223
Net imports	6,454	6,390	6,499	6,373	6,143	7,266	7,649	7,162	7,728	7,338	7,712	7,969	7,072
1977													
Crude imports	6,288	6,652	6,633	6,785	6,821	6,997	7,021	6,416	6,429	6,363	6,303	6,128	6,557
Product imports	2,594	3,278	2,610	1,886	1,753	1,872	2,021	2,175	2,136	1,862	1,814	2,183	2,146
Total imports	8,882	9,930	9,243	8,671	8,574	8,869	9,042	8,591	8,565	8,225	8,117	8,311	8,703
Exports	192	234	207	223	288	225	253	230	294	208	235	274	239
Net imports	8,690	9,696	9,036	8,448	8,286	8,644	8,789	8,361	8,271	8,017	7,882	8,037	8,464
United States													
1978													
Crude imports	6,085	5,641	5,901	5,360	5,800								
Product imports	2,039	2,047	2,285	2,197	1,799								
Total imports	8,124	7,688	8,186	7,557	7,599								
Exports	232	234	219	219	244								
Net Imports	7,892	7,454	7,967	7,338	7,355								
Canada													
1973													
Crude imports	945	975	932	772	930	741	1,058	937	940	799	934	802	897
Product imports	163	93	55	37	119	121	122	153	105	132	140	149	130
Total imports	1,108	1,068	987	809	1,049	862	1,180	1,090	1,045	931	1,074	951	1,027
Exports	1,357	1,500	1,364	1,472	1,495	1,446	1,162	1,298	1,300	1,363	1,357	1,237	1,364
Net imports	−249	−432	−377	−663	−446	−584	18	−208	−255	−432	−283	−322	−337
1975													
Crude imports	1,052	915	849	804	1,067	850	678	946	716	516	562	929	824
Product imports	48	68	27	46	56	56	48	50	40	57	26	27	41
Total imports	1,100	983	876	850	1,123	906	726	996	756	573	588	956	865
Exports	1,122	1,068	834	815	745	702	893	903	936	921	1,017	848	899
Net imports	−22	−85	42	35	378	204	−167	93	−180	−348	−429	108	−34
1976													
Crude imports	738	783	870	802	793	832	825	728	409	565	690	596	720
Product imports	21	26	30	16	45	45	43	54	23	60	50	20	36
Total imports	759	809	900	818	838	877	868	782	432	625	740	616	756
Exports	1,029	669	569	636	650	676	815	571	603	605	625	612	646
Net imports	−270	140	331	182	188	201	53	211	−171	20	115	4	110
1977													
Crude imports	729	645	752	585	679	802	614	767	515	590	584	743	669
Product imports	28	25	27	19	49	60	37	57	91	47	57	49	45
Total imports	757	670	779	604	728	862	651	824	606	637	641	792	714
Exports	611	568	522	526	515	506	523	487	500	517	517	517	526
Net imports	146	102	257	78	213	356	128	337	106	120	124	275	188
Canada													
1978													
Crude Imports	597	699											
Product Imports	50	32											
Total Imports	647	731											
Exports	554												
Net Imports	93												
Japan													
1973													
Crude imports	4,662	4,775	4,830	4,864	4,918	5,043	4,697	5,550	4,878	5,483	5,029	5,139	4,992
Product imports	640	803	650	542	664	640	523	507	443	592	533	486	584
Total imports	5,302	5,578	5,480	5,406	5,582	5,683	5,220	6,057	5,321	6,075	5,562	5,625	5,576
Exports	11	33	23	28	19	13	39	31	21	25	13	25	24
Net imports	5,291	5,545	5,457	5,378	5,563	5,670	5,181	6,026	5,300	6,050	5,549	5,600	5,552

Selected Developed Countries: Trends in Oil Trade
(Continued)

Thousand b/d

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
Japan (Continued)													
1975													
Crude imports	4,581	4,502	4,773	4,304	4,765	3,956	4,401	4,120	4,637	4,928	4,611	4,880	4,539
Product imports	471	367	466	445	439	361	487	489	461	518	545	574	469
Total imports	5,052	4,869	5,239	4,749	5,204	4,317	4,888	4,609	5,098	5,446	5,156	5,454	5,008
Exports	80	52	40	38	61	40	42	17	5	7	5	6	32
Net imports	4,972	4,817	5,199	4,711	5,143	4,277	4,846	4,592	5,093	5,439	5,151	5,448	4,976
1976													
Crude imports	3,901	4,683	4,586	4,989	4,217	4,469	4,690	4,391	4,492	4,642	5,165	5,019	4,601
Product imports	699	649	704	563	593	637	669	651	747	504	615	634	634
Total imports	4,600	5,332	5,290	5,552	4,810	5,106	5,359	5,042	5,239	5,146	5,780	5,653	5,235
Exports	3	5	9	4	4	5	5	6	9	4	9	6	6
Net imports	4,597	5,327	5,281	5,548	4,806	5,101	5,354	5,036	5,230	5,142	5,771	5,647	5,229
1977													
Crude imports	5,023	4,857	5,671	4,210	4,955	4,234	4,398	4,940	4,450	4,528	5,041	5,152	4,791
Product imports	584	686	665	632	682	729	561	644	705	739	630	705	663
Total imports	5,607	5,543	6,336	4,842	5,637	4,963	4,959	5,584	5,155	5,267	5,671	5,857	5,454
Exports	7	8	8	6	4	11	8	5	7	13	9	12	8
Net imports	5,600	5,535	6,328	4,836	5,633	4,952	4,951	5,579	5,148	5,254	5,662	5,845	5,446
1978													
Crude imports	4,954	5,130	4,871										
Product imports	624	655	709										
Total imports	5,578	5,785	5,580										
Exports	7	27	38										
Net imports	5,571	5,758	5,542										
France													
1973													
Crude imports	2,897	2,699	2,955	2,728	2,540	2,676	2,288	2,791	2,764	2,797	3,053	2,549	2,728
Product imports	137	174	148	142	176	128	138	169	139	171	126	117	147
Total imports	3,034	2,873	3,103	2,870	2,716	2,804	2,426	2,960	2,903	2,968	3,179	2,666	2,875
Exports	255	260	232	226	317	290	246	307	307	261	253	279	269
Net imports	2,779	2,613	2,871	2,644	2,399	2,514	2,180	2,653	2,596	2,707	2,926	2,387	2,606
1975													
Crude imports	2,234	2,056	2,095	2,047	1,952	1,989	2,130	2,201	2,136	2,199	2,203	2,462	2,120
Product imports	213	266	203	165	127	162	180	100	118	113	131	131	158
Total imports	2,447	2,322	2,298	2,212	2,079	2,151	2,310	2,301	2,254	2,312	2,334	2,593	2,278
Exports	209	221	175	217	190	230	182	302	264	214	267	259	227
Net imports	2,238	2,101	2,123	1,995	1,889	1,921	2,128	1,999	1,990	2,098	2,067	2,334	2,051
1976													
Crude imports	2,175	2,447	2,600	2,500	2,188	2,039	2,456	2,370	2,517	2,180	2,767	2,704	2,417
Product imports	134	143	158	158	128	233	266	218	199	223	170	151	181
Total imports	2,309	2,590	2,758	2,658	2,316	2,272	2,722	2,588	2,716	2,403	2,937	2,855	2,598
Exports	276	325	395	316	272	324	244	288	274	207	268	288	249
Net imports	2,033	2,265	2,363	2,342	2,044	1,948	2,478	2,300	2,442	2,196	2,669	2,567	2,349
1977													
Crude imports	2,711	2,508	2,198	2,537	1,944	2,079	2,289	2,360	1,810	2,646	2,592	2,523	2,350
Product imports	123	117	169	166	145	183	171	216	147	179	211	138	164
Total imports	2,834	2,625	2,367	2,703	2,089	2,262	2,460	2,576	1,957	2,825	2,803	2,661	2,514
Exports	277	266	286	356	366	276	278	351	279	260	251	295	295
Net imports	2,557	2,359	2,081	2,347	1,723	1,986	2,182	2,225	1,678	2,565	2,552	2,366	2,219
1978													
Crude imports	2,099	2,632	2,335										
Product imports	207	186	196										
Total imports	2,306	2,818	2,531										
Exports	268	297	302										
Net imports	2,038	2,521	2,229										
Italy													
1973													
Crude imports	2,308	2,448	2,600	2,598	2,498	2,996	2,779	2,784	2,606	2,548	1,844	N.A.	2,567
Product imports	76	133	97	98	154	98	109	137	232	29	65	N.A.	102
Total imports	2,384	2,581	2,697	2,696	2,652	3,094	2,888	2,921	2,838	2,577	1,909	N.A.	2,669
Exports	604	628	513	595	678	671	775	725	586	630	515	N.A.	579
Net imports	1,780	1,953	2,184	2,101	1,974	2,423	2,113	2,196	2,252	1,947	1,394	N.A.	2,090
1975													
Crude imports	1,858	1,688	1,724	1,841	1,659	1,949	1,706	1,918	2,236	2,117	1,752	1,990	1,941
Product imports	172	229	246	246	319	181	219	142	138	202	191	229	180
Total imports	2,030	1,917	1,970	2,087	1,978	2,130	1,925	2,060	2,374	2,319	1,943	2,219	2,121
Exports	240	264	212	240	246	308	285	413	394	324	252	236	291
Net imports	1,790	1,653	1,758	1,847	1,732	1,822	1,640	1,647	1,980	1,995	1,691	1,983	1,830

Selected Developed Countries: Trends in Oil Trade
(Continued)

Thousand b/d

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
Italy (Continued)													
1976													
Crude imports	2,024	2,024	2,024	2,014	2,014	2,014	2,115	2,115	2,115	2,131	2,131	2,131	2,071
Product imports	160	160	160	216	216	216	219	219	219	194	194	194	197
Total imports	2,184	2,184	2,184	2,230	2,230	2,230	2,334	2,334	2,334	2,325	2,325	2,325	2,268
Exports	271	271	271	337	337	337	322	322	322	289	289	289	305
Net imports	1,913	1,913	1,913	1,893	1,893	1,893	2,012	2,012	2,012	2,036	2,036	2,036	1,963
1977													
Crude imports	2,185	2,185	2,185	2,189	2,189	2,189	1,957	1,957	1,911	2,154	2,154	2,154	2,109
Product imports	229	229	229	209	209	209	143	143	151	135	135	135	181
Total imports	2,414	2,414	2,414	2,398	2,398	2,398	2,100	2,100	2,062	2,289	2,289	2,289	2,290
Exports	374	374	374	380	380	380	364	364	358	393	393	393	316
Net imports	2,040	2,040	2,040	2,018	2,018	2,018	1,736	1,736	1,704	1,896	1,896	1,896	1,914
United Kingdom													
1973													
Crude imports	2,276	2,090	2,273	2,248	2,402	2,535	2,175	2,818	1,917	2,892	2,415	2,004	2,329
Product imports	615	533	457	359	488	439	323	417	361	416	326	208	409
Total imports	2,891	2,623	2,730	2,607	2,890	2,974	2,498	3,235	2,278	3,308	2,741	2,212	2,738
Exports	464	311	323	329	332	257	430	555	496	464	488	293	396
Net imports	2,427	2,312	2,407	2,278	2,558	2,717	2,068	2,680	1,782	2,844	2,253	1,919	2,342
1975													
Crude imports	2,216	2,030	1,491	1,849	1,802	1,926	1,748	1,776	1,687	2,032	1,429	1,599	1,775
Product imports	442	329	267	290	231	257	262	247	240	303	348	344	292
Total imports	2,658	2,359	1,758	2,139	2,033	2,183	2,010	2,023	1,927	2,335	1,777	1,943	2,067
Exports	310	343	224	226	262	303	317	308	357	423	299	261	300
Net imports	2,348	2,016	1,534	1,913	1,771	1,880	1,693	1,715	1,570	1,912	1,478	1,683	1,767
1976													
Crude imports	1,888	1,986	1,762	1,938	1,698	1,814	1,688	1,615	1,779	1,474	2,112	1,724	1,770
Product imports	302	314	421	301	318	267	297	220	221	200	251	283	282
Total imports	2,190	2,300	2,183	2,239	2,016	2,081	1,985	1,835	2,000	1,674	2,363	2,007	2,052
Exports	333	264	384	332	349	328	407	399	488	464	522	447	392
Net imports	1,857	2,036	1,799	1,907	1,667	1,753	1,578	1,436	1,512	1,210	1,841	1,560	1,660
1977													
Crude imports	1,756	1,511	1,672	1,347	1,701	1,449	1,147	1,263	1,358	1,311	932	1,420	1,405
Product imports	253	238	261	272	312	286	261	313	249	257	317	343	286
Total imports	2,009	1,749	1,933	1,619	2,013	1,735	1,408	1,576	1,607	1,568	1,249	1,763	1,691
Exports	546	575	589	538	539	732	597	747	752	528	537	487	598
Net imports	1,463	1,174	1,344	1,081	1,474	1,003	811	829	855	1,040	712	1,276	1,093
1978													
Crude imports	1,597	1,489	1,312	1,018									
Product imports	326	319	377	227									
Total imports	1,923	1,808	1,689	1,245									
Exports	579	645	624	587									
Net imports	1,344	1,163	1,065	658									
West Germany													
1973													
Crude imports	2,177	2,217	2,226	2,201	2,173	2,306	2,091	2,140	2,297	2,359	2,274	2,067	2,210
Product imports	776	788	690	831	870	748	789	710	828	904	859	709	836
Total imports	2,953	3,005	2,916	3,032	3,043	3,054	2,889	2,850	3,125	3,263	3,133	2,776	3,046
Exports	153	177	164	135	184	174	177	185	155	239	235	141	177
Net imports	2,800	2,828	2,752	2,897	2,859	2,880	2,712	2,665	2,970	3,024	2,898	2,635	2,869
1975													
Crude imports	1,684	1,614	1,453	1,798	1,754	1,911	1,676	1,839	1,810	2,051	2,075	1,935	1,807
Product imports	583	766	606	824	575	920	794	767	873	789	667	718	709
Total imports	2,267	2,380	2,059	2,622	2,329	2,831	2,470	2,606	2,683	2,840	2,742	2,653	2,509
Exports	158	120	113	132	100	121	137	120	133	125	161	126	129
Net imports	2,109	2,260	1,946	2,490	2,229	2,710	2,333	2,486	2,550	2,715	2,581	2,527	2,380
1976													
Crude imports	1,669	1,836	1,717	1,823	1,830	1,847	2,050	2,168	2,220	2,068	2,233	2,273	1,979
Product imports	761	978	792	808	833	871	850	991	811	645	690	899	830
Total imports	2,430	2,814	2,509	2,631	2,663	2,718	2,900	3,159	3,031	2,713	2,923	3,172	2,809
Exports	113	115	148	115	131	101	176	128	168	116	132	160	134
Net imports	2,317	2,699	2,361	2,516	2,532	2,617	2,724	3,031	2,863	2,597	2,791	3,012	2,675
1977													
Crude imports	2,140	2,020	1,894	1,774	1,871	1,920	2,042	2,097	1,897	1,849	1,927	1,983	1,951
Product imports	705	615	680	813	751	921	969	835	730	812	959	1,000	817
Total imports	2,845	2,635	2,574	2,587	2,622	2,841	3,011	2,932	2,627	2,661	2,886	2,983	2,768
Exports	78	155	128	113	152	147	117	129	129	145	128	130	129
Net imports	2,767	2,480	2,446	2,474	2,470	2,694	2,894	2,803	2,498	2,516	2,758	2,853	2,639
1978													
Crude imports	1,808	1,705	1,837										
Product imports	882	972	895										
Total imports	2,690	2,677	2,732										
Exports	102	128	132										
Net imports	2,588	2,549	2,600										

[1] Bureau of the Mines data through Nov 1977.

Developed Countries: Exports to OPEC[1]

Million US $ (f.o.b.)

	Algeria	Ecuador	Gabon	Indonesia	Iran	Iraq	Kuwait	Libya	Nigeria	Qatar	Saudi Arabia	UAE	Venezuela	Total[2]
United States														
1975	**632**	**414**	**59**	**810**	**3,242**	**310**	**366**	**232**	**536**	**50**	**1,502**	**372**	**2,243**	**10,768**
1976	**487**	**416**	**46**	**1,036**	**2,776**	**382**	**472**	**277**	**770**	**79**	**2,774**	**425**	**2,628**	**12,568**
1977	**527**	**565**	**30**	**764**	**2,731**	**211**	**548**	**313**	**959**	**113**	**3,575**	**515**	**3,171**	**14,022**
1st Qtr	116	99	9	189	626	54	152	69	204	25	777	147	669	3,136
2d Qtr	146	134	10	199	809	49	157	90	240	19	929	134	771	3,687
3d Qtr	117	175	6	171	609	65	102	88	279	41	900	125	902	3,580
4th Qtr	148	157	5	205	687	43	137	66	236	28	969	109	829	3,619
Japan														
1975	**261**	**178**	**14**	**1,848**	**1,853**	**819**	**367**	**240**	**585**	**123**	**1,350**	**421**	**360**	**8,416**
1976	**205**	**134**	**17**	**1,642**	**1,709**	**626**	**720**	**327**	**575**	**230**	**1,892**	**637**	**564**	**9,274**
1977	**473**	**246**	**19**	**1,813**	**1,941**	**878**	**942**	**280**	**1,018**	**278**	**2,364**	**852**	**923**	**12,027**
1st Qtr	52	38	6	390	427	131	239	68	211	73	425	224	174	2,459
2d Qtr	145	60	5	404	417	233	242	68	225	80	567	222	240	2,906
3d Qtr	110	73	5	460	433	217	260	67	262	58	642	196	267	3,049
4th Qtr	166	75	3	559	664	297	201	77	320	67	730	210	242	3,613
1978														
Jan	47	12	1	126	167	36	35	18	64	12	167	60	38	782
Feb	54	22	1	189	245	77	63	30	101	. . .	263	67	69	1,179
West Germany														
1975	**611**	**77**	**23**	**394**	**2,107**	**1,048**	**203**	**537**	**652**	**47**	**566**	**146**	**372**	**6,783**
1976	**741**	**94**	**27**	**479**	**2,295**	**886**	**304**	**522**	**867**	**68**	**1,192**	**234**	**540**	**8,249**
1977	**1,079**	**176**	**34**	**501**	**2,741**	**778**	**371**	**650**	**1,293**	**90**	**1,713**	**367**	**985**	**10,778**
1st Qtr	313	35	9	98	609	205	79	136	260	25	298	81	158	2,306
2d Qtr	235	20	13	104	672	206	83	211	293	18	472	103	257	2,687
3d Qtr	204	45	7	123	775	174	108	135	361	29	420	92	242	2,715
4th Qtr	327	76	5	176	685	193	101	168	379	18	523	91	328	3,069
France														
1975	**1,889**	**18**	**336**	**122**	**633**	**412**	**98**	**405**	**464**	**15**	**200**	**135**	**176**	**4,897**
1976	**1,478**	**18**	**393**	**219**	**655**	**474**	**227**	**349**	**534**	**32**	**340**	**192**	**171**	**5,080**
1977	**1,799**	**22**	**411**	**189**	**682**	**444**	**160**	**399**	**749**	**62**	**619**	**184**	**248**	**5,968**
1st Qtr	364	6	121	56	154	128	36	99	185	21	114	52	56	1,392
2d Qtr	498	4	135	48	171	106	42	91	195	11	164	50	55	1,569
3d Qtr	392	4	85	46	157	94	34	92	144	14	159	39	61	1,321
4th Qtr	545	6	70	39	200	116	48	117	225	16	182	43	76	1,681
1978														
Jan	129	2	19	15	109	26	14	34	70	6	59	10	24	516
Feb	118	2	20	16	77	25	11	39	68	4	59	10	19	467
United Kingdom														
1975	**175**	**39**	**7**	**134**	**1,102**	**303**	**218**	**237**	**1,128**	**122**	**442**	**442**	**201**	**4,546**
1976	**184**	**41**	**8**	**144**	**922**	**273**	**258**	**242**	**1,388**	**155**	**710**	**578**	**230**	**5,130**
1977	**173**	**104**	**10**	**152**	**1,144**	**292**	**425**	**304**	**1,868**	**204**	**1,010**	**793**	**306**	**6,784**
1st Qtr	39	22	2	43	274	67	79	62	407	43	210	209	60	1,516
2d Qtr	34	26	3	30	283	70	114	78	483	57	251	195	64	1,688
3d Qtr	46	29	3	31	278	74	127	76	466	50	264	206	98	1,748
4th Qtr	54	27	2	48	309	81	105	88	512	54	285	183	84	1,832
1978														
Jan	21	3	3	11	119	27	71	35	176	14	110	62	28	679
Feb	25	6	1	18	88	26	50	33	186	13	104	62	33	645
Italy														
1975	**555**	**31**	**14**	**86**	**565**	**261**	**118**	**1,038**	**299**	**23**	**320**	**87**	**321**	**3,717**
1976	**429**	**25**	**19**	**56**	**768**	**246**	**180**	**996**	**329**	**27**	**658**	**138**	**365**	**4,233**
1977														
1st Qtr	128	7	7	12	202	54	54	277	123	9	218	46	126	1,263
2d Qtr	159	9	9	10	221	52	70	345	165	10	259	58	140	1,506
3d Qtr	164	11	4	17	221	58	63	286	142	8	257	40	137	1,408
4th Qtr	203	13	4	16	261	64	73	307	162	15	342	52	153	1,665

Developed Countries: Exports to OPEC [1]
(Continued)

Million US $ (f.o.b.)

	Algeria	Ecuador	Gabon	Indonesia	Iran	Iraq	Kuwait	Libya	Nigeria	Qatar	Saudi Arabia	UAE	Venezuela	Total [2]
Canada														
1975	99	21	...	66	144	66	16	22	38	1	35	5	198	712
1976	96	28	2	78	153	36	23	10	33	5	108	13	230	813
1977	185	19	1	63	138	55	35	18	31	4	101	19	291	940
1st Qtr	30	3	1	25	35	22	13	2	10	1	29	3	58	232
2d Qtr	31	5	...	11	32	12	9	6	7	1	23	5	99	240
3d Qtr	52	7	...	16	34	10	7	6	7	1	26	5	58	229
4th Qtr	52	4	...	11	37	11	6	4	7	1	23	6	76	238

25X1X

[redacted]

[2] Because of rounding, components may not add to totals shown.

Developed Countries: Imports From OPEC[1]

Million US $ (c.i.f.)

	Algeria	Ecuador	Gabon	Indonesia	Iran	Iraq	Kuwait	Libya	Nigeria	Qatar	Saudi Arabia	UAE	Venezuela	Total[2]
United States														
1975	1,448	515	215	2,447	1,579	23	126	1,120	3,525	64	2,987	781	3,869	18,699
1976	2,344	595	206	3,277	1,631	123	41	2,406	5,251	133	5,847	1,532	3,782	27,168
1977	3,228	661	240	3,756	3,032	420	239	4,021	6,440	315	7,012	1,810	4,273	35,447
1st Qtr	736	169	62	984	712	50	74	885	1,746	45	1,783	453	1,274	8,973
2d Qtr	783	185	67	996	762	138	81	1,139	1,688	81	1,896	485	1,006	9,307
3d Qtr	830	172	71	979	890	94	38	952	1,525	98	1,768	402	1,103	8,922
4th Qtr	879	135	40	797	668	138	46	1,045	1,481	91	1,565	470	890	8,245
Japan														
1975	36	14	12	3,430	4,979	396	2,010	280	279	28	6,132	1,774	34	19,402
1976	11	22	18	4,095	4,454	580	2,017	206	109	30	7,835	2,472	34	21,885
1977	25	30	7	5,033	4,270	740	2,502	112	21	200	8,570	2,769	50	24,329
1st Qtr	2	5	3	1,251	1,180	187	514	14	4	45	2,326	698	11	6,240
2d Qtr	7	9	...	1,256	1,040	199	648	28	9	46	1,880	607	12	5,741
3d Qtr	7	7	2	1,271	988	213	623	30	5	28	2,021	673	15	5,882
4th Qtr	9	9	2	1,255	1,062	141	717	40	3	81	2,343	791	12	6,462
1978														
Jan	...	2	1	425	353	72	272	...	...	56	744	212	7	2,144
Feb	7	2	...	452	313	105	180	...	1	26	771	236	4	2,095
West Germany														
1975	1,025	63	107	154	1,469	127	226	1,391	961	125	1,623	735	230	8,236
1976	1,146	69	70	214	1,988	155	182	2,103	974	125	1,799	693	209	9,727
1977	1,175	78	61	328	1,868	126	159	2,162	1,103	103	1,924	913	119	10,119
1st Qtr	329	21	17	98	497	39	45	624	232	17	436	197	30	2,582
2d Qtr	246	17	18	68	468	31	40	502	284	34	492	205	28	2,433
3d Qtr	303	16	6	77	420	32	21	541	267	31	542	252	28	2,536
4th Qtr	297	24	20	85	483	24	53	495	320	21	454	259	33	2,568
France														
1975	741	15	245	55	1,265	1,082	619	189	849	207	2,986	1,096	85	9,435
1976	694	14	294	97	1,440	1,595	410	321	751	326	4,087	1,238	95	11,360
1977	789	48	370	157	1,099	1,831	353	309	945	316	4,315	1,191	98	11,821
1st Qtr	197	6	88	31	449	471	126	66	209	100	1,034	264	20	3,057
2d Qtr	204	14	102	40	299	349	75	51	249	63	907	276	19	2,648
3d Qtr	200	17	105	41	132	470	75	86	208	58	1,146	304	31	2,872
4th Qtr	188	11	75	45	219	541	77	106	279	95	1,228	347	28	3,237
1978														
Jan	73	4	40	23	143	146	19	24	74	51	366	30	5	997
Feb	72	3	20	13	85	222	20	30	89	35	320	76	5	989
United Kingdom														
1975	190	5	10	33	1,553	225	936	289	687	347	1,917	358	366	6,914
1976	147	4	16	41	1,880	492	1,043	296	575	459	1,762	363	216	7,290
1977	87	8	5	50	1,360	581	944	246	382	174	1,903	454	117	6,311
1st Qtr	27	1	2	9	482	139	224	30	159	99	499	92	20	1,783
2d Qtr	21	2	1	11	359	146	283	81	69	33	559	102	35	1,701
3d Qtr	24	3	1	16	256	141	211	86	75	25	424	142	31	1,436
4th Qtr	15	2	1	14	263	155	226	49	79	17	421	118	31	1,391
1978														
Jan	5	1	3	6	78	112	147	3	24	13	187	56	11	644
Feb	2	1	...	4	153	45	83	26	47	...	189	32	7	589
Italy														
1975	403	34	44	54	1,140	1,664	361	1,240	68	129	2,351	201	161	7,846
1976	308	26	16	119	1,270	1,354	208	1,645	58	145	2,512	248	211	8,120
1977														
1st Qtr	41	8	13	34	343	373	169	357	31	26	649	97	38	2,177
2d Qtr	45	13	7	35	365	452	174	409	37	34	837	43	48	2,498
3d Qtr	51	9	5	25	392	224	128	337	15	11	794	59	55	2,105
4th Qtr	59	8	2	43	392	343	232	404	22	31	628	52	34	2,250

Developed Countries: Imports From OPEC[1]
(Continued)

Million US $ (c.i.f.)

	Algeria	Ecuador	Gabon	Indonesia	Iran	Iraq	Kuwait	Libya	Nigeria	Qatar	Saudi Arabia	UAE	Venezuela	Total[2]
Canada														
1975	**2**	**22**	**28**	**15**	**819**	**144**	**120**	**39**	**84**	**7**	**809**	**153**	**1,189**	**3,430**
1976	**73**	**35**	**67**	**21**	**745**	**149**	**25**	**117**	**175**	**...**	**569**	**69**	**1,445**	**3,485**
1977	**49**	**68**	**19**	**25**	**552**	**114**	**20**	**...**	**39**	**...**	**721**	**14**	**1,426**	**3,047**
1st Qtr	10	24	16	4	140	25	...	...	15	...	210	...	373	816
2d Qtr	12	17	...	7	145	...	...	...	...	...	184	...	374	739
3d Qtr	22	11	3	9	148	41	...	...	18	...	194	7	365	818
4th Qtr	5	16	...	5	119	48	20	...	6	...	133	7	314	673

25X1X

[2] Because of rounding, components may not add to totals shown.

Thousand b/d

		1972	1973	1974	1975	1976	1977	1978
United States[1]	**Annual Average**	**16,367**	**17,308**	**16,653**	**16,322**	**17,461**	**18,418**	
	Jan	16,735	18,713	17,286	18,004	18,598	20,481	(est) 19,605
	Feb	17,861	19,094	17,366	17,084	17,429	20,427	(est) 20,768
	Mar	16,870	17,216	16,104	16,315	17,299	18,056	(est) 19,844
	Apr	15,529	15,921	15,929	16,048	16,671	17,570	(est) 18,220
	May	14,801	16,626	15,726	15,155	15,977	16,960	(est) 18,028
	Jun	15,615	16,481	16,117	15,610	16,836	18,048	
	Jul	14,821	16,372	16,349	15,740	16,613	17,549	
	Aug	15,936	17,499	16,550	15,806	16,642	18,009	
	Sep	15,489	16,656	16,024	15,768	16,825	17,733	
	Oct	16,455	17,202	17,050	16,377	17,052	17,831	
	Nov	17,610	18,492	17,351	15,777	18,847	18,440	
	Dec	18,738	17,538	18,013	18,185	20,560	20,046	
Canada	**Annual Average**	**1,511**	**1,597**	**1,630**	**1,595**	**1,658**	**1,664**	
	Jan	1,536	1,667	1,823	1,691	1,785	1,797	1,815
	Feb	1,793	1,747	1,863	1,872	1,754	1,919	1,976
	Mar	1,612	1,584	1,659	1,558	1,747	1,664	(est) 1,697
	Apr	1,367	1,431	1,560	1,592	1,518	1,523	
	May	1,374	1,486	1,577	1,471	1,509	1,520	
	Jun	1,334	1,474	1,455	1,550	1,560	1,631	
	Jul	1,294	1,490	1,534	1,493	1,531	1,499	
	Aug	1,394	1,557	1,463	1,449	1,585	1,689	
	Sep	1,402	1,427	1,415	1,469	1,514	1,539	
	Oct	1,577	1,680	1,680	1,555	1,560	1,631	
	Nov	1,685	1,801	1,714	1,577	1,822	1,683	
	Dec	1,782	1,828	1,831	1,880	2,008	1,896	
Japan	**Annual Average**	**4,311**	**5,000**	**4,872**	**4,568**	**4,786**	**5,015**	
	Jan	N.A.	5,036	5,103	4,729	4,941	5,433	5,271
	Feb	N.A.	5,352	5,664	5,191	5,246	6,025	5,979
	Mar	N.A.	5,306	5,407	4,918	5,165	5,539	(est) 5,657
	Apr	N.A.	4,737	4,706	4,202	4,526	4,714	
	May	N.A.	4,597	4,568	4,041	4,218	4,314	
	Jun	N.A.	4,776	4,520	4,135	4,429	4,484	
	Jul	N.A.	4,586	4,385	4,265	4,416	4,716	
	Aug	N.A.	4,684	4,576	4,234	4,461	4,709	
	Sep	N.A.	4,778	4,720	4,543	4,517	4,742	
	Oct	N.A.	5,093	4,614	4,409	4,523	4,664	
	Nov	N.A.	5,559	4,925	4,747	5,160	5,093	
	Dec	N.A.	5,526	5,330	5,447	5,846	5,800	
Austria	**Annual Average**	**203**	**227**	**203**	**199**	**215**	**206**	
	Jan	189	220	236	183	207	200	216
	Feb	221	225	220	190	208	208	235
	Mar	212	224	160	172	209	182	
	Apr	183	204	169	184	156	197	
	May	174	210	172	156	169	166	
	Jun	181	200	169	186	189	208	
	Jul	179	221	214	210	219	192	
	Aug	187	222	218	223	229	213	
	Sep	213	227	222	232	246	221	
	Oct	227	253	243	226	233	202	
	Nov	246	276	215	201	252	236	
	Dec	230	234	203	229	261	245	
Belgium/Luxembourg	**Annual Average**	485	**505**	**440**	**416**	**449**	**442**	
	Jan	535	543	512	550	498	552	
	Feb	591	589	528	558	547	507	
	Mar	546	570	392	410	469	517	
	Apr	470	565	383	465	460	483	

Selected OECD Countries' Trends in Motor Gasoline Consumption
(Continued)

Thousand b/d

		1972	1973	1974	1975	1976	1977	1978
Belgium/Luxembourg (Continued)	May	454	483	419	363	357	397	
	Jun	464	463	376	366	383	414	
	Jul	346	359	339	288	308	253	
	Aug	367	389	352	331	361	335	
	Sep	479	465	478	372	425	428	
	Oct	484	556	534	442	424	414	
	Nov	563	558	427	439	532	504	
	Dec	530	503	542	508	628	505	
Denmark	Annual Average				301	307	309	
	Jan	N.A.	N.A.	N.A.	332	358	370	338
	Feb	N.A.	N.A.	N.A.	380	398	405	407
	Mar	N.A.	N.A.	N.A.	317	367	362	
	Apr	N.A.	N.A.	N.A.	354	307	340	
	May	N.A.	N.A.	N.A.	258	242	241	
	Jun	N.A.	N.A.	N.A.	257	250	236	
	Jul	N.A.	N.A.	N.A.	218	184	192	
	Aug	N.A.	N.A.	N.A.	264	261	293	
	Sep	N.A.	N.A.	N.A.	262	274	326	
	Oct	N.A.	N.A.	N.A.	302	280	246	
	Nov	N.A.	N.A.	N.A.	324	356	323	
	Dec	N.A.	N.A.	N.A.	353	414	376	
France	Annual Average	1,985	2,219	2,094	1,925	2,075	1,973	
	Jan	2,276	2,743	2,523	2,190	2,436	2,519	2,646
	Feb	2,450	2,687	2,389	2,243	2,486	2,386	2,601
	Mar	2,100	2,528	2,249	1,952	2,381	2,109	2,237
	Apr	1,848	2,296	1,970	2,202	2,100	2,043	2,055
	May	1,743	1,890	1,915	1,640	1,796	1,846	
	Jun	1,597	1,685	2,103	1,642	1,593	1,715	
	Jul	1,444	1,566	1,703	1,491	1,629	1,349	
	Aug	1,441	1,495	1,506	1,300	1,668	1,390	
	Sep	1,950	1,932	1,996	1,785	1,974	1,783	
	Oct	2,106	2,482	2,045	1,917	1,904	1,882	
	Nov	2,332	2,593	2,260	2,077	2,236	2,181	
	Dec	2,574	2,768	2,492	2,658	2,712	2,512	
Italy [2]	Annual Average	1,435	1,525	1,521	1,468	1,503	1,476	
	Jan	1,720	1,781	1,755	1,792	1,775	1,696	1,755
	Feb	1,756	1,866	1,760	1,767	1,743	1,823	1,859
	Mar	1,450	1,710	1,579	1,558	1,641	1,573	1,570
	Apr	1,169	1,420	1,421	1,530	1,423	1,326	1,328
	May	1,138	1,285	1,349	1,174	1,253	1,268	
	Jun	1,101	1,255	1,314	1,289	1,236	1,340	
	Jul	1,175	1,303	1,368	1,234	1,355	1,251	
	Aug	1,129	1,255	1,287	1,105	1,372	1,140	
	Sep	1,450	1,462	1,527	1,465	1,604	1,502	
	Oct	1,650	1,610	1,569	1,679	1,464	1,405	
	Nov	1,702	1,551	1,580	1,448	1,393	1,605	
	Dec	1,899	1,698	1,753	1,600	1,779	1,817	
Netherlands	Annual Average	496	507	444	412	487	457	
	Jan	509	584	468	399	480	494	
	Feb	591	586	522	430	542	502	
	Mar	557	542	438	379	543	494	
	Apr	512	541	530	474	443	424	
	May	453	475	432	390	453	393	
	Jun	430	436	427	403	462	456	
	Jul	374	408	415	354	426	388	
	Aug	435	437	414	364	446	414	
	Sep	440	485	440	412	493	447	

Selected OECD Countries: Trends in Imports of Crude Oil
(Continued)

Thousand b/d

		1972	1973	1974	1975	1976	1977	1978
Netherlands (Continued)	Oct	515	594	472	440	469	459	
	Nov	581	503	440	419	517	511	
	Dec	567	505	433	484	576	504	
	Annual Average	N.A.	N.A.	143	150	163	170	
Norway	Jan	N.A.	N.A.	155	142	161	177	171
	Feb	N.A.	N.A.	154	171	180	202	193
	Mar	N.A.	N.A.	124	137	181	189	171
	Apr	N.A.	N.A.	126	149	145	162	
	May	N.A.	N.A.	118	145	147	150	
	Jun	N.A.	N.A.	141	130	153	159	
	Jul	N.A.	N.A.	113	120	130	131	
	Aug	N.A.	N.A.	125	140	146	156	
	Sep	N.A.	N.A.	151	161	168	189	
	Oct	N.A.	N.A.	161	162	167	161	
	Nov	N.A.	N.A.	174	181	175	179	
	Dec	N.A.	N.A.	180	162	197	192	
	Annual Average	471	581	626	667	744	693	
Spain	Jan	483	539	610	720	758	740	747
	Feb	508	568	639	682	785	727	771
	Mar	461	564	571	625	769	660	715
	Apr	447	537	595	688	742	634	
	May	444	523	620	622	685	670	
	Jun	472	530	608	610	714	672	
	Jul	457	466	630	624	755	677	
	Aug	462	667	617	584	685	612	
	Sep	477	576	636	667	734	700	
	Oct	459	669	677	713	742	682	
	Nov	500	646	653	706	780	743	
	Dec	515	681	650	735	782	804	
	Annual Average	N.A.	533	490	478	529	512	
Sweden	Jan	N.A.	603	521	511	565	606	481
	Feb	N.A.	555	415	547	530	600	
	Mar	N.A.	540	427	479	539	545	
	Apr	N.A.	506	441	532	450	499	
	May	N.A.	524	495	392	395	466	
	Jun	N.A.	420	464	511	410	410	
	Jul	N.A.	387	423	362	382	388	
	Aug	N.A.	455	463	459	483	456	
	Sep	N.A.	492	516	503	571	497	
	Oct	N.A.	656	553	462	585	492	
	Nov	N.A.	645	568	446	697	546	
	Dec	N.A.	618	581	538	740	590	
	Annual Average	1,954	1,974	1,857	1,633	1,627	1,665	
United Kingdom	Jan	2,121	2,315	2,045	1,981	1,679	1,860	1,852
	Feb	2,401	2,313	2,127	1,907	1,865	1,874	1,929
	Mar	2,249	2,271	2,133	1,731	1,879	1,848	1,867
	Apr	2,027	2,038	1,899	1,826	1,716	1,670	
	May	1,851	1,939	1,704	1,482	1,417	1,545	
	Jun	1,745	1,697	1,545	1,416	1,416	1,477	
	Jul	1,519	1,637	1,531	1,322	1,346	1,321	
	Aug	1,527	1,615	1,513	1,208	1,296	1,371	
	Sep	1,703	1,727	1,663	1,501	1,501	1,580	
	Oct	1,959	2,150	2,049	1,707	1,568	1,570	
	Nov	2,194	2,258	2,108	1,723	1,778	1,925	
	Dec	2,132	1,906	1,983	1,821	1,899	1,903	

Selected OECD Countries: Trends in Inland Oil Consumption
(Continued)

Thousand b/d

		1972	1973	1974	1975	1976	1977	1978
West Germany	Annual Average	2,521	2,693	2,408	2,319	2,507	2,478	
	Jan	2,545	2,868	2,556	2,183	2,464	2,393	2,461
	Feb	2,803	2,850	1,969	2,455	2,497	2,446	3,013
	Mar	2,525	2,707	2,173	2,234	2,747	2,523	2,610
	Apr	2,347	2,809	2,539	2,431	2,339	2,431	
	May	2,335	2,546	2,403	2,253	2,320	2,364	
	Jun	2,632	2,674	2,414	2,106	2,393	2,475	
	Jul	2,188	2,196	2,548	2,319	2,624	2,382	
	Aug	2,444	2,738	2,476	2,360	2,515	2,469	
	Sep	2,487	2,618	2,473	2,309	2,521	2,567	
	Oct	2,522	2,969	2,613	2,328	2,391	2,324	
	Nov	2,667	2,883	2,432	2,361	2,700	2,649	
	Dec	2,783	2,481	2,261	2,502	2,571	2,719	
Australia	Annual Average	...	...	...	...	483	510	
	Jan	...	...	...	...	411	447	436
	Feb	...	...	...	...	459	491	
	Mar	...	...	...	...	463	476	
	Apr	...	...	...	...	467	462	
	May	...	...	...	...	479	547	
	Jun	...	...	...	..	526	575	
	Jul	...	...	...	..	503	502	
	Aug	...	...	...	..	516	550	
	Sep	...	...	...	..	530	583	
	Oct	...	...	...	..	459	470	
	Nov	...	...	...	...	484	512	
	Dec	...	...	...	...	510	511	

[1] Including bunkers, refinery fuel, and losses.
[2] Principal products only.

Selected OECD Countries: Oil Stocks

Thousand Barrels, End of Month

	United States	Japan	Canada	Belgium	Denmark	France	Ireland	Italy
1973 Sep	1,057,911 [1]	300,000	113,193	N.A.	N.A.	N.A.	N.A.	N.A.
1974 Mar	995,365 [1]	257,000	116,060	N.A.	N.A.	N.A.	N.A.	N.A.
Jun	1,102,467 [1]	325,000	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sep	1,156,105 [1]	359,000	148,305	N.A.	N.A.	N.A.	N.A.	N.A.
Dec	1,115,916 [1]	334,000	142,233	N.A.	N.A.	N.A.	N.A.	N.A.
1975 Mar	1,076,360	296,000	133,805	45,968	34,770	N.A.	7,636	136,890
Jun	1,071,150	314,000	140,617	44,983	34,887	N.A.	7,899	142,335
Sep	1,147,338	330,000	147,939	51,644	44,333	254,296	7,716	152,490
Dec	1,111,810	325,000	138,462	51,538	43,836	222,051	6,293	142,153
1976 [2] Mar	1,060,489	290,000	121,490	42,340	36,281	191,245	5,913	117,260
Jun	1,108,703	325,000	132,174	47,187	35,033	202,684	6,563	132,882
Sep	1,191,450	365,000	138,211	48,165	42,033	239,265	6,570	141,496
Dec	1,111,810	359,000	125,934	40,077	41,296	231,133	6,008	140,773
1977 Mar	1,086,822	327,000	125,757	41,508	36,354	209,868	5,840	135,692
Jun	1,195,088	362,000	138,808	49,589	39,456	201,130	7,001	162,381
Sep	1,303,369	376,000	142,660	57,371	46,340	225,592	6,979	163,958
Dec	1,311,217	383,000	143,545	51,618	46,107	234,629	7,001	161,440
1978 Jan	1,259,400	389,000	137,274	N.A.	N.A.	N.A.	N.A.	N.A.
Feb	1,171,500	363,000	132,155	N.A.	N.A.	N.A.	N.A.	N.A.
Mar	1,150,400	352,000	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Apr	1,158,200	352,000						
May	1,163,600	407,000						

	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Switzer-land	Turkey	United Kingdom	West Germany
1973 Sep	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1974 Mar	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Jun	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Sep	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Dec	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1975 Mar	569	82,724	12,534	N.A.	61,393	27,638	9,636	N.A.	148,832
Jun	504	82,738	11,921	N.A.	58,845	28,368	10,957	N.A.	151,424
Sep	548	83,614	13,563	6,541	61,743	30,332	11,271	N.A.	170,083
Dec	511	80,059	13,702	5,876	59,181	30,565	6,979	N.A.	184,004
1976 Mar	438	71,336	16,958	8,556	57,874	28,360	10,424	145,555	165,783
Jun	584	71,744	18,980	7,680	66,211	29,375	10,103	156,417	172,244
Sep	584	84,315	17,162	7,008	68,240	30,580	9,870	163,323	190,858
Dec	606	80,190	17,454	9,176	66,897	32,230	11,680	163,111	204,787
1977 Mar	650	75,438	14,133	8,838	77,760	32,018	8,475	146,518	203,342
Jun	620	83,388	15,936	9,629	81,694	34,500	14,089	155,884	201,677
Sep	606	86,819	17,009	9,132	77,701	35,222	10,614	152,512	216,971
Nov	642	79,935	18,812	11,147	79,059	35,573	N.A.	144,868	222,110

[1] Estimated.

[2] As of January 1977, US Bureau of Mines changed the reporting of crude oil stocks to include foreign crude oil not yet received at refineries. Figures for 1976 and 1977 have been computed on the new basis.

Note: West European stock data have been revised to reflect a more comprehensive coverage of oil statistics by the OECD.

Estimated OECD Oil Consumption [1]

Million b/d

	1st Qtr	2d Qtr	3d Qtr	4th Qtr
1973	43.2	37.6	36.8	42.4
1974	39.6	35.9	36.3	39.0
1975	37.9	34.2	34.2	37.6
1976	39.9	35.7	36.2	41.1
1977	42.5	37.1	37.1	40.2

[1] Excluding Australia and New Zealand, and including US refinery gain.

Western Europe: Oil Spot Market Prices

US $ per Barrel

	F.O.B. Rotterdam [1]				F.O.B. Italy [2]			
	Heavy Fuel Oil				Heavy Fuel Oil			
	1% Sulfur	3.5% Sulfur	Gas Oil	Gasoline (Premium)	1% Sulfur	3.5% Sulfur	Gas Oil	Gasoline (Premium)
1974								
1st Qtr	14.02	12.77	15.13	19.76	13.87	12.88	13.95	19.26
2d Qtr	10.15	9.70	11.77	19.61	9.90	9.35	10.93	18.77
3d Qtr	9.87	9.24	12.34	13.92	9.61	9.23	11.96	13.15
4th Qtr	11.09	10.11	12.33	13.26	10.29	9.96	11.68	12.08
1975								
1st Qtr	11.97	10.49	11.18	14.20	10.57	10.24	11.10	13.23
2d Qtr	10.61	9.68	12.90	15.95	10.40	10.16	12.24	15.28
3d Qtr	9.33	8.62	14.40	15.02	8.81	8.30	13.87	14.64
4th Qtr	9.53	8.33	14.84	15.85	8.99	8.38	14.56	15.24
1976								
1st Qtr	10.39	9.84	13.79	17.10	9.95	9.65	13.59	16.48
2d Qtr	10.40	9.56	14.08	19.24	10.18	9.73	13.90	18.30
3d Qtr	11.06	9.99	14.40	18.02	10.34	10.06	14.19	17.37
4th Qtr	12.07	10.76	14.57	17.44	11.64	10.85	14.48	16.83
1977								
1st Qtr	13.25	11.71	15.80	16.82	13.53	12.06	15.89	16.56
2d Qtr	12.51	10.77	15.74	17.26	12.25	10.88	15.71	16.48
3d Qtr	12.47	11.33	15.67	16.60	12.42	11.29	15.70	15.87
4th Qtr	12.76	11.68	15.94	16.44	12.21	11.63	15.71	15.44
1978								
Jan	12.92	11.67	16.10	16.26	11.87	11.34	15.99	15.42
Feb	12.78	11.38	15.93	16.75	11.95	11.41	16.11	15.69
Mar	12.95	11.27	16.40	17.60	12.31	11.40	16.44	16.09
Apr	13.05	11.25	16.92	17.55	12.41	11.08	16.65	16.41
May	12.69	11.06	16.32	17.94	11.76	10.65	16.31	17.00

[1] Barge lot—minimum 3,500 barrels.
[2] Cargo lot—minimum 130,000 barrels.

Selected Developed Countries: Retail Petroleum Product Prices

US Cents per US Gallon

	Regular Gasoline		Premium Gasoline		Diesel Fuel	
	Price [1]	Tax	Price [1]	Tax	Price [1]	Tax
United States						
1973 Oct	40	12	44	12	23	12
1974 Jun	55	12	59	12	36	12
1975 Jun	57	12	61	12	51	12
1976 Jun	59	12	64	12	52	12
1977 Jun	63	12	69	12	57	12
Nov	63	12	69	12	57	12
Japan						
1973 Oct	102	46	116	46	53	23
1974 Jun	159	55	181	55	82	23
1975 Jun	181	55	206	55	95	23
1976 Jun	183	55	208	55	101	23
1977 Jun	194	68	221	68	109	30
Dec	189	68	215	68	106	30
West Germany						
1973 Oct	133	96	148	98	134	91
1974 Jun	163	99	177	100	166	94
1975 Jun	157	100	170	100	162	91
1976 Jun	172	100	183	101	168	94
1977 Jun	168	100	178	102	167	94
Dec	167	100	177	102	167	94
France [2]						
1973 Oct	100	68	108	72	69	42
1974 Jun	129	72	140	77	83	44
1975 Jun	135	77	147	81	90	48
1976 Jun	146	80	157	85	101	50
1977 Jun	175	106	190	113	115	57
Dec	175	106	190	113	115	57
United Kingdom						
1973 Oct	57	36	60	36	57	36
1974 Jun	86	44	89	44	88	44
1975 Jun	113	44	117	44	88	44
1976 Jun	120	60	124	61	99	44
1977 Jun	134	72	137	72	136	67
Dec	121	62	124	62	136	67
Italy [2]						
1973 Oct	78	59	82	61	42	27
1974 Jun	110	70	116	73	60	28
1975 Jun	128	87	134	90	63	29
1976 Jun	172	111	178	115	73	30
1977 Jun	214	154	223	159	69	20
Dec	214	154	223	159	69	20

NOTE: Converted at 1 March 1978 exchange rates.

[1] Including tax.

[2] Government price ceilings in effect.

OPEC Countries: Crude Oil Prices

US $ per Barrel

	1st Qtr 1977		2d Qtr 1977		3d Qtr 1977		4th Qtr 1977		1st Qtr 1978	
	Operating Company Cost [1]	Direct Sales Price [2]	Operating Company Cost	Direct Sales Price	Operating Company Cost	Direct Sales Price	Operating Company Cost	Direct Sales Price	Operating Company Cost	Direct Sales Price
OPEC average [3]	12.45	12.74	12.46	12.76	12.70	13.01	12.69	12.99	12.67	12.96
Saudi Arabia										
Light 34° API 1.70% sulfur	11.84	12.09	11.84	12.09	12.45	12.70	12.45	12.70	12.50	12.70
Berri 39° API 1.16% sulfur	12.22	12.48	12.22	12.48	12.95	13.22	12.95	13.22	13.02	13.22
Heavy 27° API 2.85% sulfur	11.13	11.37	11.13	11.37	11.77	12.02	11.77	12.02	11.82	12.02
Medium 31° API 2.40% sulfur	11.44	11.69	11.44	11.69	12.07	12.32	12.07	12.32	12.12	12.32
Iran										
Light 34° API 1.35% sulfur	12.59	12.81	12.59	12.81	12.59	12.81	12.59	12.81	12.59	12.81
Heavy 31° API 1.60% sulfur	12.27	12.49	12.27	12.49	12.27	12.49	12.27	12.49	12.27	12.49
Iraq 35° API 1.95% sulfur	12.62	12.62	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60
Nigeria 34° API 0.16% sulfur	13.91	14.22	14.15	14.52	14.15	14.52	14.15	14.52	13.86	14.22
UAE 39° API 0.75% sulfur	12.08	12.50	12.08	12.50	12.73	13.26	12.73	13.26	12.73	13.26
Kuwait 31° API 2.50% sulfur [4]	12.22	12.37	12.22	12.37	12.22	12.37	12.22	12.37	12.12	12.27
Libya 40° API 0.22% sulfur	13.68	13.92	13.68	13.92	14.01	14.20	14.01	14.20	13.75	14.00
Venezuela 26° API 1.52% sulfur	12.52	12.72	12.52	12.72	12.52	12.72	12.62	12.82	12.62	12.82
Indonesia 35° API 0.09% sulfur	12.15	13.55	12.15	13.55	12.15	13.55	12.15	13.55	12.25	13.55
Algeria 42° API 0.10% sulfur	14.29	14.29	14.29	14.29	14.45	14.45	14.45	14.45	14.25	14.25
Qatar 40° API 1.17% sulfur	12.88	13.19	12.88	13.19	12.88	13.19	12.88	13.19	12.88	13.19
Gabon 29° API 1.26% sulfur	11.79	12.80	11.79	12.80	11.79	12.80	11.79	12.80	11.79	12.80
Ecuador 28° API 0.93% sulfur	11.68	13.00	11.68	13.00	11.68	13.00	11.68	12.60	11.32	12.40

[1] Total average f.o.b. costs paid by present or former concessionaires.

[2] F.o.b. prices set by the government for direct sales and, in most cases, for the producing company buy-back oil.

[3] Weighted by the volume of production.

[4] A 10-cent-per-barrel discount will be offered to buyers provided they meet their minimum contractual lifting volumes for second half 1977. The discount will be credited to the lifting companies' accounts beginning in first quarter 1978.

USSR: Crude Oil Production [1]

	Million b/d
1970	7.06
1971	7.54
1972	8.01
1973	8.58
1974	9.18
1975	9.82
1976	10.39
1977	10.92
1st Qtr	10.72
2d Qtr	10.88
3d Qtr	10.96
4th Qtr	11.09
1978	
1st Qtr	11.19
Apr	11.31
May	11.35

[1] Including natural gas liquids.

USSR: Regional Production of Crude Oil [1]

Million b/d

	1970	1971	1972	1973	1974	1975	1976 [2]	1977 [2]
Total	7.06	7.54	8.01	8.58	9.18	9.82	10.39	10.92
Urals-Volga	4.17	4.23	4.31	4.40	4.44	4.50	4.45	4.34
West Siberia	0.63	0.90	1.25	1.75	2.33	2.96	3.63	4.34
Central Asia	0.58	0.66	0.71	0.76	0.79	0.81	0.80	0.78
Azerbaydzhan SSR	0.40	0.38	0.37	0.36	0.36	0.34	0.33	0.32
North Caucasus	0.68	0.72	0.69	0.59	0.53	0.47	0.42	0.38
Ukrainian SSR	0.27	0.28	0.28	0.27	0.25	0.23	0.23	0.21
Komi ASSR	0.11	0.12	0.13	0.13	0.14	0.14	0.18	0.22
Belorussia SSR	0.08	0.11	0.12	0.14	0.16	0.16	0.17	0.18
Far East	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04
Other	0.09	0.09	0.10	0.13	0.13	0.17	0.14	0.11

[1] Including natural gas liquids.
[2] Preliminary.

USSR: Imports of Oil

Thousand b/d

	1970	1971	1972	1973	1974	1975	1976	1977 [1]
Total	90	130	180	290	110	150	128	150
Middle East								
Egypt	40	40	20	4	3	5	3	
Iraq	...	...	80	220	78	108	116	
Other	50	90	80	66	29	37	9	

[1] Preliminary.

USSR: Exports of Oil

Thousand b/d

	1970	1971	1972	1973	1974	1975	1976	1977 [1]
Total	**1,920**	**2,110**	**2,140**	**2,380**	**2,340**	**2,600**	**2,970**	**3,200**
Other Communist countries	**1,010**	**1,110**	**1,200**	**1,350**	**1,440**	**1,550**	**1,680**	**1,800**
Eastern Europe	805	895	975	1,100	1,180	1,260	1,370	
Asia	30	25	20	20	30	40	40	
Cuba	120	130	140	150	155	160	175	
Yugoslavia	55	60	65	80	75	90	95	
Free World countries	**910**	**1,000**	**940**	**1,030**	**900**	**1,050**	**1,290**	**1,400**
North America	5	...	10	30	20	15	23	
Canada	...	...	...	...	3	5	2	
United States	5	...	10	30	17	10	21	
Western Europe	760	830	815	880	750	880	1,102	
Finland	155	170	170	200	180	175	190	
France	50	90	60	105	30	70	117	
Italy	205	180	170	175	135	135	240	
Netherlands	30	35	50	65	60	60	53	
Sweden	95	90	90	65	60	70	55	
West Germany	125	120	125	115	125	150	145	
Other	100	145	150	155	160	220	302	
Near and Middle East	60	60	50	30	30	45	56	
Egypt	30	32	30	7	4	5	5	
Greece	20	20	18	16	20	38	40	
Other	10	8	2	7	6	2	11	
Africa	25	30	35	35	23	20	23	
Ghana	10	12	13	12	6	3	5	
Morocco	14	17	19	19	13	13	13	
Other	1	1	3	4	4	4	5	
Asia	60	80	30	55	52	60	65	
India	5	10	8	10	20	25	22	
Japan	54	66	20	41	25	26	35	
Other	1	4	2	4	7	9	8	
Latin America	...	...	...	...	25	30	21	
Brazil	...	...	...	...	25	30	21	

[1] Preliminary.

USSR: Oil Consumption

	Million b/d
1970	5.15
1971	5.46
1972	5.92
1973	6.33
1974	6.79
1975	7.20
1976	7.55
1977 [1]	7.9

[1] Preliminary.

USSR: Natural Gas Production [1]
Billion ft³/d

1970	19.2
1971	20.5
1972	21.4
1973	22.9
1974	25.2
1975	28.0
1976	30.9
1977	33.5
1st Qtr	34.0
2d Qtr	32.4
3d Qtr	32.2
4th Qtr	35.4
1978	
1st Qtr	36.5
Apr	36.0
May	34.9

[1] To convert to m³/d multiply data by 0.028316847.

USSR: Regional Production of Natural Gas [1]
Billion ft³/d

	1970	1971	1972	1973	1974	1975	1976 [2]	1977 [3]
Total	**19.2**	**20.5**	**21.4**	**22.9**	**25.2**	**28.0**	**30.9**	**33.5**
Central Asia	4.7	5.2	5.7	6.9	8.0	9.2	10.2	10.6
Ukrainian SSR	5.9	6.3	6.5	6.6	6.6	6.6	6.5	6.3
North Caucasus	3.7	3.5	2.9	2.5	2.4	2.3	2.3	2.2
West Siberia	0.9	0.9	1.1	1.6	2.4	3.6	4.3	6.9
Komi ASSR	0.6	1.0	1.3	1.3	1.6	1.8	2.0	2.0
Azerbaydzhan SSR	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Urals-Voga and other producing regions in the RSFSR	2.8	3.1	3.2	3.1	3.3	3.5	4.5	4.3

[1] To convert to m³/d multiply data by 0.028316847.
[2] Revised.
[3] Preliminary.

USSR: Natural Gas Trade [1]
Billion ft³/d

	1970	1971	1972	1973	1974	1975	1976	1977 [2]
Exports	**0.3**	**0.4**	**0.5**	**0.7**	**1.4**	**1.9**	**2.5**	**2.9**
Eastern Europe	0.2	0.3	0.3	0.5	0.8	1.1	1.5	1.5
Bulgaria	...	...	...	...	Negl.	0.1	0.2	0.3
Czechoslovakia	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.4
East Germany	...	...	...	0.1	0.3	0.3	0.3	0.4
Hungary	...	...	...	...	...	0.1	0.1	0.1
Poland	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3
Western Europe	0.1	0.1	0.2	0.2	0.5	0.8	1.2	1.4
Austria	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2
Finland	...	...	...	...	Negl.	0.1	0.1	0.1
France	...	...	...	...	...	...	0.1	0.1
Italy	...	...	...	...	0.1	0.2	0.4	0.5
West Germany	...	...	...	Negl.	0.2	0.3	0.4	0.5
Imports	**0.3**	**0.8**	**1.1**	**1.1**	**1.2**	**1.2**	**1.1**	**1.3**
Afghanistan	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.3
Iran	0.1	0.5	0.8	0.8	0.9	0.9	0.9	1.0

[1] To convert to m³/d multiply data by 0.028316847.
[2] Estimated.

USSR: Consumption of Natural Gas [1]

	Billion ft³/d
1970	19.2
1971	20.9
1972	21.9
1973	23.3
1974	25.0
1975	27.3
1976	29.6
1977	31.9

[1] To convert to m³/d multiply data by 0.028316847.

Eastern Europe: Oil Production and Consumption

Thousand b/d

	1970	1971	1972	1973	1974	1975	1976	1977 [2]
Production	**384**	**393**	**404**	**410**	**417**	**423**	**430**	**431**
Bulgaria	7	6	5	4	3	2	2	2
Czechoslovakia	4	4	4	3	3	3	3	2
East Germany	1	1	1	1	1	1	1	1
Hungary	39	39	40	40	40	40	43	44
Poland	8	8	7	8	11	11	9	9
Romania	268	276	283	286	290	292	294	293
Yugoslavia	57	59	64	68	69	74	78	80
Consumption [1]	**1,225**	**1,374**	**1,509**	**1,787**	**1,777**	**1,884**	**2,019**	**2,145**
Bulgaria	184	212	222	248	268	248	256	265
Czechoslovakia	208	236	256	300	314	327	354	374
East Germany	182	202	259	277	269	282	311	330
Hungary	127	144	162	179	188	218	227	233
Poland	172	192	215	268	262	311	323	343
Romania	198	217	229	261	241	259	293	340
Yugoslavia	155	169	164	254	235	239	255	260

[1] Crude oil equivalent. Because of rounding, components may not add to totals shown.
[2] Estimated.

Eastern Europe: Oil Trade

Thousand b/d

	1970	1971	1972	1973	1974	1975	1976 [1]
Crude Oil [2]							
Imports	**879**	**1,013**	**1,171**	**1,401**	**1,421**	**1,551**	**1,732**
USSR	679	800	921	1,044	1,108	1,242	1,331
OPEC	102	117	107	233	295	260	326
Iraq	40	53	28	53	93	125	112
Iran	62	64	71	94	63	72	14
Algeria	...	...	6	...	5	14	7
Libya	...	Negl.	2	...	4	9	13
Kuwait	...	...	...	4	...	15	...
Other	...	...	...	82 [3]	130 [3]	25 [3]	179 [3]
Non-OPEC	98	96	143	124	18	49	75
Belgium	...	...	...	...	6	4	19
West Germany	...	...	...	6	4	...	11
Netherlands	...	...	...	...	2	11	1
Syria	Negl.	...	7	3	Negl.	...	...
France	...	7	1	...	...	...	...
Other	98	89	135	115	6	25	44
Petroleum products							
Imports	**166**	**153**	**159**	**177**	**180**	**160**	**164**
Bulgaria	58	51	47	47	48	34	37
Czechoslovakia	22	20	21	25	27	21	25
East Germany	2	4	11	2	2	3	3
Hungary	19	16	14	20	21	19	21
Poland	48	45	47	61	60	63	64
Yugoslavia	17	17	19	22	22	20	14
Exports	**201**	**182**	**220**	**204**	**236**	**243**	**298**
Czechoslovakia	15	18	20	13	10	15	17
East Germany	26	20	47	48	58	57	55
Hungary	18	10	13	13	10	11	11
Poland	26	21	34	27	24	32	54
Romania	107	107	102	99	129	124	157
Yugoslavia	9	6	4	4	5	4	4

[1] Estimated.

[2] Crude oil exports are negligible.

[3] Including data that cannot be distributed by country of origin.

Eastern Europe: Natural Gas Production and Consumption [1]

Billion ft³/d

	1970	1971	1972	1973	1974	1975	1976	1977
Production	**3.5**	**3.9**	**4.3**	**4.7**	**4.8**	**5.1**	**5.6**	**5.7**
Bulgaria	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.
Czechoslovakia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
East Germany	0.1	0.3	0.5	0.7	0.7	0.7	0.8	0.8 [2]
Hungary	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6
Poland	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.7
Romania	2.3	2.5	2.6	2.7	2.8	3.1	3.3	3.2
Yugoslavia	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Consumption	3.8	4.2	4.6	5.2	5.7	6.2	7.1	7.2
Bulgaria	Negl.	Negl.	Negl.	Negl.	Negl.	0.1	0.2	0.3
Czechoslovakia	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.5
East Germany	0.1	0.3	0.5	0.8	1.0	1.0	1.2	1.2
Hungary	0.4	0.4	0.4	0.5	0.5	0.6	0.8	0.8
Poland	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1.0
Romania	2.3	2.5	2.5	2.7	2.8	3.0	3.3	3.2
Yugoslavia	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2

[1] To convert to m³/d multiply data by 0.028316847.

[2] Estimated.

Eastern Europe: Natural Gas Trade [1]

Million ft³/d

	1970	1971	1972	1973	1974	1975	1976	1977
Imports	259.7	332.9	353.8	486.8	841.0	1,113.7	1,350.4	1,503.3
Bulgaria	...	...	...	...	29.7	114.7	215.7	290.0 [2]
Czechoslovakia	131.3	160.6	189.3	230.8	315.0	369.7	447.9	450.0 [2]
East Germany	11.9	8.1	Negl.	71.3	272.1	308.5	323.3	380.0 [2]
Hungary	19.4	20.1	19.4	19.4	19.4	78.0	116.9	116.4
Poland	97.1	144.1	145.1	165.3	204.8	242.8	246.6	266.9
Exports	29.6	34.1	32.9	28.3	23.3	23.1	25.3	24.4 [2]
Czechoslovakia	8.4	11.9	11.4	9.5	3.5	3.7	5.9	5.0 [2]
Romania	19.4	19.4	19.4	18.7	19.8	19.4	19.4	19.4 [2]
Yugoslavia	1.8	2.8	2.1	Negl.	...	...	...	...

[1] To convert to m³/d, multiply by 0.028316847.
[2] Estimated.

PRC: Oil Production, Consumption, and Exports

Thousand b/d

	1973	1974	1975	1976	1977
Crude Oil Production	1,096	1,315	1,485	1,672	1,806
Crude Oil Consumption	920	1,030	1,300	1,500	1,600
Oil Exports [2]	40	110	210	190	205
Japan	19.4	78.1	157.6	121.2	132.0
Philippines	...	2.1	8.3	11.3	10.0
Thailand	0.4	0.8	1.1	5.9	...
Hong Kong	0.8	6.6	13.1	12.3	14.0 [1]
Other countries [3]	20	20	30	40	50

[1] Preliminary.
[2] Exports include both crude oil and petroleum products. Data are rounded to the nearest five thousand barrels.
[3] Rough estimate of sales to North Korea, Romania, and Vietnam. Sales to North Korea jumped sharply beginning in 1975 when a pipeline between PRC and North Korea was completed.